RAILROAD GAZETTE

FRIDAY, JULY 31, 1903.

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Contributions

Who Taught Trade Unions to Be Bad?

TO THE EDITOR OF THE RAILROAD GAZETTE:

Referring to my note as published in your issue of the 17th and your comments thereon: No one detests the outrages of labor, organized, unorganized or disorganized, more than I do. The articles in the *Railroad Gazette* on the subject are severe, as they were no doubt meant to be. The wrongs that they condemn are flagrant, burning and outrageous; but, and here's the question that I meant to suggest: Are they any more so than the crimes of those who combine and conspire to defraud governments, national, State and municipal; to cheat the public of valuable franchises through fraud, perjury and corruption; bribing legislators, corrupting judges and hiring a venal press to aid them in their nefarious schemes? I detest anarchy as thoroughly and heartily as does the *Railroad Gazette;* but do not those who combine to suppress and thwart by unfair means schemes and plans for the opening of new lines of transportation that are needed by the country, or the development of new enterprises of various kinds, that would open avenues of labor to thousands, simply because these may lessen their millions a trifle; are not these men setting a fair copy for the trades unionist to follow in protecting his interest? One does by stealth and corruption what the other does by open violence.

The trades unionist is a little more open, honest and manly, although ruder and more brutal than the other. It may be true, indeed, that the majority of those who manage or control our great corporations do not actively do such things themselves; but they countenance and consort with those who do, and they point to them often as examples of shrewdness, pluck, enterprise and ability; and they profit by their conduct and divide the proceeds with them. The writer does not find himself alone or provincial in the view he takes of such things. The enclosed clipping from the *Century Magazine* is hardly needed to satisfy you on this subject.

The trades unionists are fast breeding anarchy, but, I repeat the question, who began it? Did not the briber, the corruptionist, the franchise stealer, the railroad president who ran a construction company on the side, for the benefit of himself and a few friends, the railroad wrecker, etc., etc., set the copy? and what sort of men are these to talk about right, law, duty and the like? This may sound too violent and incendiary to publish and I do not ask it of you. I shall not complain or condemn you if in your editorial discretion, which I vastly prefer you should exercise freely, you see fit to withhold all or any part of it. I only want to remind you of what I have long seen and felt; that there are more sides than one to this matter. I agree with you most heartily that it is high time to call a halt in the proceedings of trades unionism and other forms of anarchy and disorder, but the halt should be called "all along the line" and not at one point only. The reform should begin with the brains, culture and wealth of the country. Let them show respect for law, justice and right, and then will we honor and listen to their appeal to others to do so.

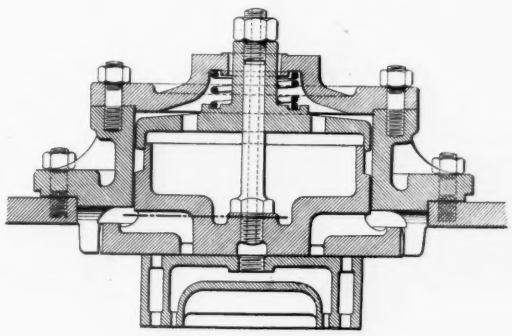
INQUIRER.

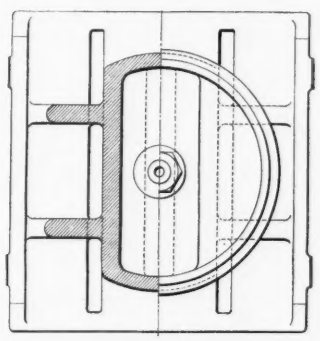
Gölsdorf Balanced Slide Valve.

Vienna, July 11, 1903.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the June 19, 1903, issue of your esteemed paper (p. 427) is an illustration of a balanced slide valve for the Northern Pacific 4-6-2 locomotives which is similar to a balanced slide valve I designed in 1895 for the high pressure cylinder of the 4-4-0 compound express locomotive (Series 6) of the Imperial Royal Austrian State Railways.





The Gölsdorf Balanced Slide Valve.

Three engines of this class were fitted with this type of valve (see Fig.), and after three years service I found no advantage in their use. The wear of the valves or valve gear was not reduced. They were consequently replaced by ordinary non-balanced D valves.

The port on the inner side of the slide valve, which looks like an Allan-Trick port, was provided to reduce the excessive compression in the high pressure cylinder of a two cylinder compound. The steam in the compression space can overflow, by means of this port, to the exhaust side of the piston from whence it passes into the receiver without any appreciable loss of power.

KARL GOLSDORF,
K. K. Baurath Eisenbahn Ministerium.

[The low pressure cylinder of the Gölsdorf compound is cast with two small ports in its valve face. When the valve motion is in full gear, steam enters the low pressure steam chest through one of these small ports. As soon as the engine is "hooked up," the low pressure slide valve no longer uncovers the small ports and the low pressure cylinder receives steam only from the high pressure exhaust. The auxiliary port through the valve, which is mentioned in the above letter, should not be confused with the ports in the valve seat.—EDITOR.]

Statistics of the American Iron Trade for 1902.

The American Iron & Steel Association has issued its annual statistical report on the iron and steel industries of the United States for 1902, and the years immediately preceding, and also statistics of coal, coke and shipbuilding industries of the United States and of the iron and steel industries of Canada, and of other foreign countries. In the last report, printed in June, 1902, the opinion was expressed that while a reaction from the great prosperity then prevailing was expected some time, it seemed reasonably certain that the year 1902 would close under as favorable industrial conditions as signalized its opening, and that these conditions would be continued far into 1903, and perhaps longer. The current report calls attention to the fact that the extraordinary prosperity of 1902 has continued to the present time, and that it bids fair to continue for some time to come without serious interruption. A decline in the stock market does not mean an end to this prosperity.

There was an increased demand in 1902 for foreign iron and steel products to meet a deficiency in the home supply, and there was a further decline that year in our exports of these products, which was inevitable with an active home demand and higher prices. The increase in the imports of iron and steel had, indeed, commenced in 1899 and the decrease in exports in 1901; but the increase in imports became more marked in 1902 as the months passed. In the years immediately preceding 1899 our imports of iron and steel had greatly declined and until 1901 our exports had greatly increased. In 1902 the conditions were the reverse.

Although there was much interruption in 1902 to continuous operation of the iron and steel works, caused by the anthracite strike and by freight congestion on the railroads, the year's production of iron and steel was not only larger than that of any preceding year but it was very much larger, as was also the production of iron ore and coke. The shipment of Lake Superior iron ore in 1902 amounted to 27,571,121 gross tons, as compared with 20,593,387 tons in 1901, and the shipments of Connellsville coke amounted to 14,138,740 net tons, against 12,609,949 tons in 1901. The production of pig iron in 1901 amounted to 17,821,307 gross tons, against 15,878,354 tons in 1901; of Bessemer steel to 9,138,363 tons, against 8,713,302 tons, and of open hearth steel to 5,687,729 tons, against 4,656,309 tons. The Association predicts that it is probable that within a few years this country will make one-half of all the pig iron and one-half of all the steel that the world produces. The following table gives the shipments of iron ore from some of the leading iron ore districts of the country during the last three years:

Shipments of iron ore from leading districts.	Gross tons. 1900.	1901.	1902.
Lake Superior mines, Michigan and Wisconsin.....	9,594,038	9,802,584	12,144,018
Vermilion and Mesabi mines, Minnesota	9,465,355	10,790,953	15,427,103
Missouri mines	88,475	94,374	65,645
Cornwall mines, Penn.....	558,713	747,012	594,177
New Jersey mines.....	339,914	419,762	399,984
Chateaugay mines, L. Cham.	87,592	70,025	83,688
Port Henry mines.....	140,767	167,642	365,437
Salisbury region, Conn....	22,792	19,472	23,276
Alleghany County, Va.....	137,031	143,530	144,637
Cranberry mines, N. C....	20,479	180	30,810
Tenn. Coal, Iron and R. R. Co.'s mines in Tennessee.	31,586	26,304	4,948
Same Co.'s mines in Ala...	1,376,522	1,415,723	1,276,969
Calhoun, Etowah and Shelby Counties, Ala.....	154,849	202,095	422,745
Total, above districts..	22,018,113	23,899,656	30,983,437

A table is also given of the production of pig iron by the States in 1901 and 1902, in the order of their prominence during the latter year, as follows:

States.	Gross tons. 1901.	1902.
Pennsylvania	7,343,257	8,117,800
Ohio	3,326,425	3,631,388
Illinois	1,596,850	1,730,220
Alabama	1,225,212	1,472,211
Virginia	448,662	537,216
New York	283,662	401,369
Tennessee	337,139	392,778
Maryland	303,186	303,229
Wisconsin and Minnesota.....	207,551	273,987
Missouri, Colorado and Washington.	203,409	269,930
New Jersey	155,746	191,380
West Virginia	166,597	183,005
Michigan	170,762	155,213
Kentucky	68,462	110,725
North Carolina and Georgia.....	27,333	32,315
Connecticut	8,442	12,086
Massachusetts	3,386	3,360
Texas	2,273	3,095
Total	15,878,354	17,821,307

The whole number of furnaces which were in blast at the close of 1902 was 307, against 266 at the close of 1901, and 232 at the close of 1900. Of these 307 furnaces 222 were fired with bituminous coal and coke, 52 with anthracite and with anthracite and coke, and 33 with charcoal and with charcoal and coke. The number of furnaces out of blast at the close of 1902 was 105, many of these being only temporarily banked because of the inability of their owners to obtain fuel. At the close of 1901 there were 140 furnaces out of blast.

The total production of Bessemer steel ingots and castings in the United States in 1902 was 9,138,363 gross tons, as against 8,713,302 tons in 1901, an increase of 425,061 tons, or 4.8 per cent. The increase in 1901 over 1900 amounted to 2,028,532 tons, or over 30 per cent.

The following table shows the total production of all

kinds of steel ingots and castings in the United States in the 13 years from 1890 to 1902:

	Gross tons.				
Year.	Bessemer.	Open-hearth.	Cru-cible.	Miscel-laneous.	Total, ingots and castings.
1890.....	3,688,871	513,232	71,175	3,793	4,277,071
1891.....	3,247,417	579,753	72,586	4,484	3,904,240
1892.....	4,168,435	669,889	84,709	4,548	4,927,581
1893.....	3,215,686	737,890	63,613	2,806	4,019,995
1894.....	3,571,313	784,936	51,702	4,081	4,412,032
1895.....	4,909,128	1,137,182	67,666	858	6,114,834
1896.....	3,919,906	1,298,700	60,689	2,394	5,281,689
1897.....	5,475,315	1,608,671	69,959	3,012	7,156,957
1898.....	6,609,017	2,230,292	89,747	3,801	8,932,857
1899.....	7,586,354	2,947,316	101,213	4,974	10,639,857
1900.....	6,684,770	3,398,135	100,562	4,862	10,188,329
1901.....	8,713,302	4,656,309	98,513	5,471	13,473,595
1902.....	9,138,363	5,687,729	112,772	8,386	14,947,250

The production of all kinds of Bessemer steel rails by the producers of Bessemer steel ingots in 1902 was 2,876,293 gross tons, against 2,836,273 tons in 1901, and 2,361,921 tons in 1900. The maximum production of Bessemer steel rails by the producers of Bessemer ingots was reached in 1902, but the increase in that year over 1901 amounted to only 40,020 tons, or 1.4 per cent. As compared with 1887, 15 years ago, the increase in 1902 amounted to only 831,474 tons, or 40 per cent., while during the same period the increase in the production of Bessemer ingots amounted to 6,202,330 tons, or almost 211 per cent.

	Coal and lignite.		
Countries.	Year.	Production, tons.	Per cent.
United States	1901	261,873,675	33.43
Great Britain	1901	219,046,945	27.97
Germany and Luxem.....	1901	152,628,931	19.49
France	1901	32,325,302	4.13
Belgium	1901	22,213,410	2.84
Austria-Hungary	1901	41,202,902	5.26
Russia and Finland.....	1901	16,269,800	2.08

The Walking Delegate's Turning Point.

The July issue of the *Monthly Circular*, of the banking house of John H. Davis & Co., of New York, contains comment on the existing labor situation, starting with the premise that when things are at the worst they begin to mend. This Wall street maxim is given as one well to keep in mind when any especial trouble becomes almost unbearable. The writer points out that the demands of the walking delegates and business agents of the unions have gone beyond all reason during the past year, and that this fact is thoroughly well known to all thinking men; and evidences are increasing that there are many thinking men in the ranks of labor. The attitude of the unions has grown arrogant, tyrannical and destructive beyond anything ever known before. It amounts to a demand for the actual management of many industries, not only in the hours of labor and the wages paid, but as to the men employed and the amount of work they shall do. As an illustration: One of the printed rules of the "District Council of the City of New York and vicinity of the United Brotherhood of Carpenters and Joiners," says, in plain words that "Any member who does an unreasonable amount of work or who acts as a leader for his employer for the purpose of getting all the work possible out of the men working in the same shop or job with him shall be fined for the first offense $10; for second offense he shall be suspended or expelled and no member shall work for an employer known as a 'lumper.'" Manifestly, the purpose is to do as little work in eight hours as possible, to get as much for it as can be squeezed out of an employer, to make the capacity (or the inclination) of the least efficient workman the measure of each man's daily toil, to discourage and punish individual effort or ambition, and to limit the power and authority of an employer or contractor to the payment of such wages as the business agent may demand, to just as many men as that thrifty official may decide.

It is to be noted that the employers—from railroads and great corporations down to individual contractors—have taken no attitude of hostility to unions in themselves but only to the methods in which the unions permit themselves to be used and controlled. Startling disclosures of some of these methods have been made in the courts. The result has been that the strikes lack moral or popular support and many of them have been declared off. It has been estimated that nearly 300,000 workmen were idle on June 1, by reason of strikes, but that the number at present is less than 100,000. It has been a period of education for all classes and especially for the army of workmen who have been drafted into an army of idlers. The Mayor of Derby, Conn., himself a leader in a trade union, is quoted as declaring that the walking delegate should be abolished "because he is entrusted with too much power, because he is tempted to abuse the trust put in him, because his interest is in fomenting trouble and not in preventing it, and because he is too expensive." He argues that the work of the unions should be entrusted to committees paid only their ordinary wages, who would know better when to go out and when to give in "because they would know better the rights of the members and what the employers could really afford to do."

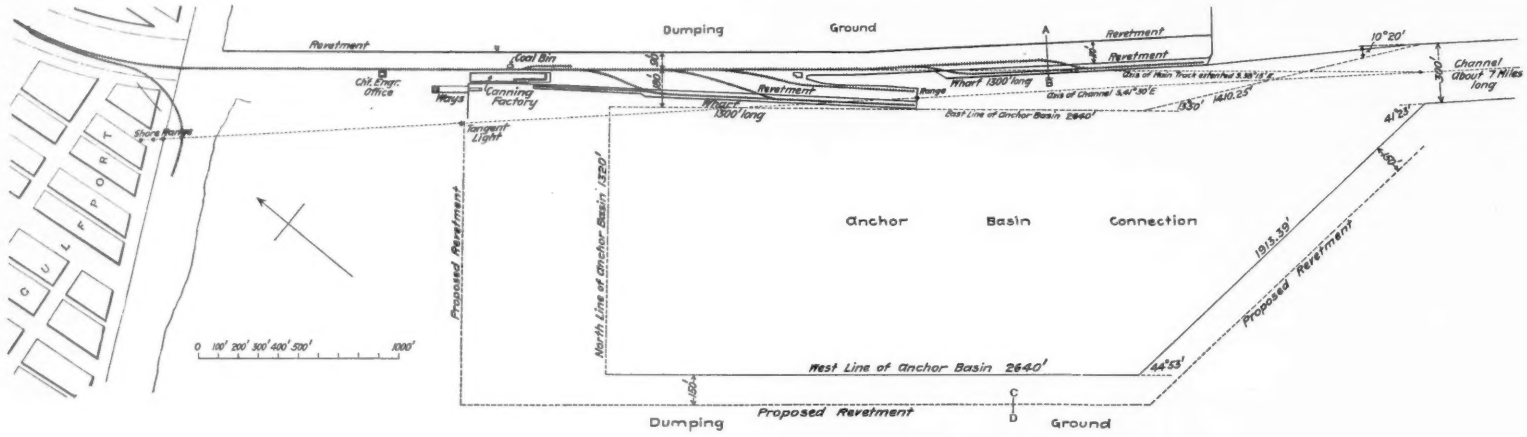
It may be that Albert Young, who is inciting the Chicago riots, and Sam Parks, who is under indictment in New York on five counts for extortion, blackmail and assault, are now doing a greater service for the cause of temperateness and moderation than are ever so many business men's associations, inasmuch as they show the *reductio ad absurdum* of the principles which they represent.

The Rebuilding of the Gulf & Ship Island.

About twenty years ago the State of Mississippi offered an appropriation to aid in building a railroad from Gulfport, on the Mississippi Sound, to Chicago. The project was not carefully thought out by the legislative body of the State and it was presumably not taken very seriously by anybody, but it served to attract speculators who were after the appropriation. With this in view two short lines were built, one running south from Middleton, Tenn., and the other running north for about 20 miles from Gulfport. Both of these lines were of the flimsiest possible construction. The one in the North passed into other hands; the one in the South formed a portion of what is now known as the Gulf & Ship Island, and until recent years amounted to little more than a streak of rust through the pine woods.

In 1897 Mr. Joseph T. Jones, of Buffalo, secured an interest in the property and eventually bought out a controlling interest from the other owners. Since that time the road has been entirely rebuilt along the original grant and extended to Jackson, Miss., with a branch to Columbia on the Pearl River and another branch to Laurel, Miss. The main line from Jackson to Gulfport is 160 miles long, and the two branches named are approximately 50 miles each. A third branch about 60 miles long is now being built which will in effect give a double track through a greater part of the lumber territory. The road has a rather interesting and unusual location in that it runs through practically its entire length in a virgin forest of long leaf pine and in that no part of its mileage is paralleled by any other line. In general terms, it covers the lumber territory east of the Pearl River in the same manner that the Illinois Central covers the territory west. The company operates under a perpetual charter, granted before the present State constitution was adopted.

It has been the purpose of the present owners to provide the road with a deep sea terminal at Gulfport. For many years the anchorage in the lee of Ship Island, which lies 12 miles off shore from Gulfport, has been well known.



Plan of the Harbor at Gulfport, Miss.—Gulf & Ship Island Railroad.

The following table gives the production of all kinds of rails in 1902 according to weight. Street rails are included in the totals, but the quantity made in each year can no longer be given separately.

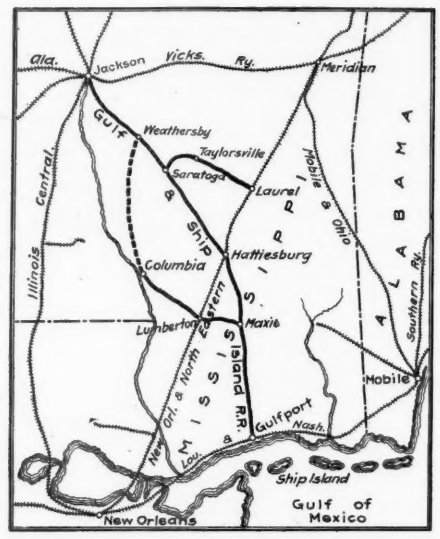
	Gross tons.			
Kind of rails.	Under 45 lbs.	45 lbs. and less than 85.	85 lbs. and over.	Total.
Bessemer steel rails....	253,167	2,037,063	645,162	2,935,392
Open-hearth steel rails.	2,208	3,821	...	6,029
Iron rails	6,512	...	...	6,512
Total for 1902.....	261,887	2,040,884	645,162	2,947,933
Total for 1901.....	155,406	2,225,411	493,822	2,874,639
Total for 1900.....	157,531	1,626,093	602,058	2,385,682
Total for 1899.....	133,836	1,559,340	579,524	2,272,700
Total for 1898.....	123,881	1,404,150	453,210	1,981,241
Total for 1897.....	88,896	1,223,435	335,561	1,647,892

The next table shows the shipments of Lake Superior iron ore, the shipments of Connellsville and Pocahontas coke, the shipments of anthracite coal, and other figures for 1901 and 1902.

Articles—Gross tons, except for coke.	1901.	1902.
Shipments iron ore from Lake Sup.	20,593,537	27,571,121
Total production of iron ore.....	28,887,479	...
Shipments of Penn. anthracite coal.	53,568,601	31,200,890
Total production all kinds of coal..	261,873,675	...
Total production coke, net tons...	21,795,883	...
Shipm'ts Connellsville coke, net tons	12,609,949	14,138,740
Shipments of Pocahontas Flat Top coke, in net tons.....	1,279,949	1,191,436
Production of pig iron, including spiegel and ferro.....	15,787,354	17,821,307
Produc. Bess. steel ingots & castings	4,656,309	5,687,729
Production of open-hearth steel ingots and castings.....	4,656,309	5,687,729
Production of all kinds of steel...	13,473,595	14,947,250
Production of all rolled iron and steel, except rails.....	9,474,688	10,996,183
Production of Bessemer steel rails.	2,870,816	2,935,392
Production of all kinds of rails....	2,874,639	2,947,933
Imports of iron ore.....	966,950	1,165,470
Exports of iron ore.....	64,703	88,445
Imports of iron and steel, value...	$20,395,015	$41,468,826
Exports of iron and steel, value...	$102,534,575	$97,892,036

The concluding table gives the production of iron ore and of coal in the seven countries of the world which led in the production for the year 1901. No other single country produced more than 1 per cent. of the total amount.

	Iron ore.		
Countries.	Year.	Production, tons.	Per cent.
United States	1901	28,887,479	33.25
Great Britain	1901	12,275,198	14.13
Germany and Luxem.....	1901	16,570,258	19.08
France	1901	4,790,732	5.51
Belgium	1901	218,780	.25
Austria-Hungary	1901	3,643,115	4.19
Russia and Finland.....	1901	5,663,000	6.52



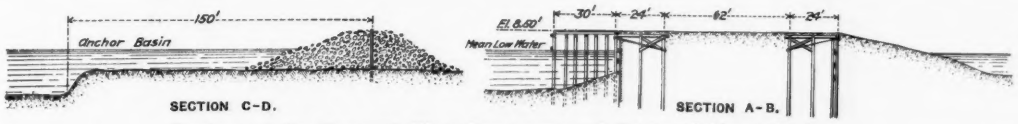
Map of the Gulf & Ship Island.

The Gulf & Ship Island Railroad has dredged a channel connecting the Ship Island harbor with Gulfport, under contract with the United States Government. This channel is 7 miles long and 300 ft. wide, and has now a depth of approximately 24 ft. Previous to the dredging doubts were expressed as to whether it would be possible to make a permanent channel, which would withstand the effects of currents and of storms. Subsequent results have shown, however, that the channel is not affected by cross currents or streams of any kind, and that the tide, which is very slight, flows in a direction practically the same as that of the channel, and tends to scour it deeper. In consequence, the channel has remained absolutely permanent, although it received a severe test in August, 1901,

when the Gulf coast experienced one of the worst storms in its history.

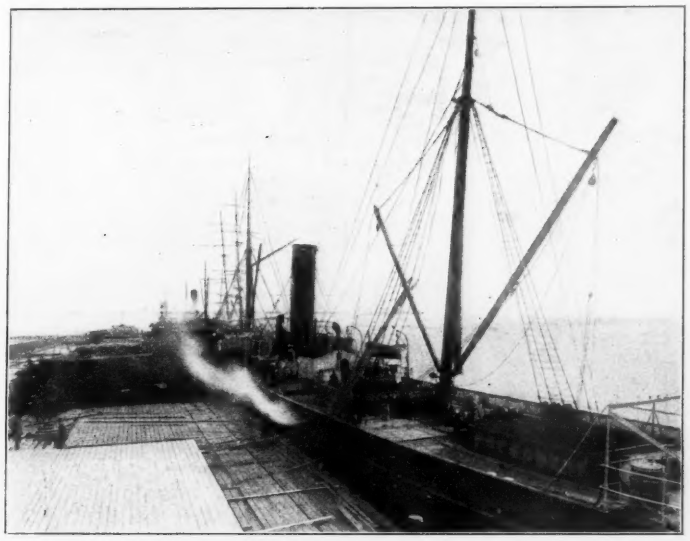
In connection with the channel the railroad has built an anchor basin varying from a quarter to half a mile wide, which is protected by sea walls. The wall on the east side, which is a little over a mile long, consists of timber revetments 110 ft. apart and 8 ft. 5 in. above mean low water. The intervening space is to be filled with dredged material. The west revetment of this wall, which is now being completed, is made of creosoted timber, as it will be subject to the attacks of the teredo.

About 2,000 ft. north of the end of the sea wall is a slip over which there was at first a transfer crane for unloading cars on the barges. Since the dredging of the channel and the anchor basin, however, this has been taken down and vessels now take their cargo directly from the wharves, as will be seen from the accompanying photographs. The slip is now used for coaling purposes, etc. Along the west side of the sea wall and adjacent to the anchor basin there are two wharves 1,300 ft. long and 30 ft. wide, and provision has been made to build other walls along the north end when they are required. The construction of the wall along the west side of the basin is somewhat different from that on the east side. A row of untreated piles is being driven close together, 150 ft. west of the west line of the basin and will be filled in on each side with oyster shells which, it is thought, will in time cement themselves and form a solid wall. Oyster shells are readily obtained all along the Gulf, and there is a canning factory located on the east pier, which is already doing a large business. The output of the plant last spring was approximately 1,000 barrels a day.



Sections of the Proposed West Revetment and Docks—Gulfport Harbor.

The accompanying illustrations show quite clearly the general scheme of what has been done. The harbor is considered easier of access than either Mobile or New Orleans, having the Ship Island anchorages to protect it, and the company wishes to secure a steady export business accompanied by the back haul supplied by the cargoes of inbound ships calling for lumber. At present the demand for lumber is extremely great, and the wharves are at all times crowded with vessels, which take cargoes for points as remote as South Africa. The back haul, however, has not as yet been realized to the expected degree. A considerable proportion of the vessels which load lumber at Gulfport go first to the West Indies to discharge their cargo and are chartered light to take out lumber. It seems not unlikely that in years to come an enterprising freight manager can secure a market over his line for a good part of the westbound steamship cargoes. It would seem to a casual observer also that there was a good opening here for a line of small coasting steamers to carry lumber North, similar to the Wilmington, N. C., service of the Clyde Line. In this case a general cargo could probably be carried South on the steamers profitably, for distribution in the area covered by the railroad.



Vessels at the East Pier.

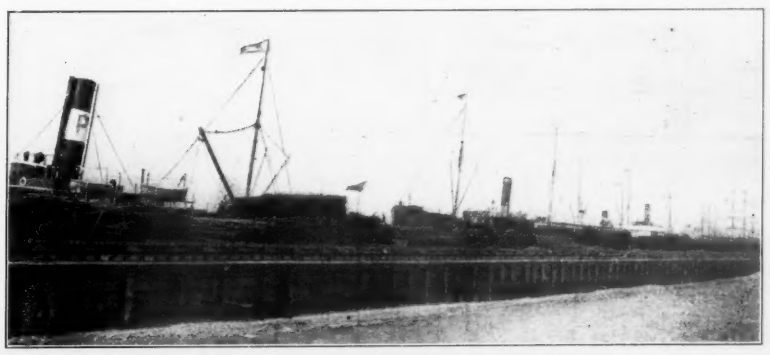
The new management has been greatly interested in the development of the little city of Gulfport, and has recently built a $300,000 hotel there, which is designed to make the city a popular resort. It will be greatly handicapped, however, by the unfortunate fact that the luxuriant live oak and other trees which beautify the towns along the Mississippi Sound were cut down at Gulfport under the previous management, so that the town presents a rather barren appearance. The new railroad shops and other features incident to the commercial development, however, have brought the population up from 1,060 in 1901 to approximately 3,500 at the present time.

In the rebuilding of the railroad, cuts are being widened to 23 ft., with 1-1 slope, and fills to 18 ft. with 1½-1 slope. When widened, about 10 ft. of gravel ballast is placed on the roadbed. For the north end of the line, ballast was obtained near Weathersby, which produces a fine grade of cement gravel. Ballasting on the south end of the line has just been begun. The road was originally laid with second-hand 56-lb. and 60-lb. rails, except about 40 miles laid with 65-lb. rails. The 56-lb. and 60-lb. rails are now being replaced with 75-lb. rails, fitted with 26 in. angle bars. About 45 miles of these 75-lb. rails have been laid already, 20 miles more are practically completed and 25 miles additional is to be laid during July. Some of the better of the old rail has been used on the Laurel branch. The shop facilities were very inadequate, so that various improvements have also been made in this department. A car shop 60 ft. x 304 ft. was built in connection with the planing and woodworking mill, 60 ft. x 80 ft.; a paint shop, 40 ft. x 100 ft., and store rooms. The main machine shop was also extended and new engine pits have been built.

The work which is being done also includes a new yard at Hattiesburg, 70 miles from Gulfport; a six stall roundhouse at the same place, and a 66 ft. deck turn-table, designed for a 139 ton engine. The turn-table is placed direct on a concrete foundation which rests on piles.

Four new steel bridges on creosoted piers are now being built. The longest of the bridges, crossing Leaf River, on the Laurel branch near Taylorsville, Miss., consists of a 150 ft. through riveted truss and a 59 ft. through plate girder span, replacing a wooden Howe truss. A 90 ft. wooden Howe truss over the lower Little River on the Columbia branch is also being replaced by a 150 ft. through riveted truss. At all of these bridges there are approach trestles at both ends of the spans. The Silver Creek branch which is being built to connect up two branch lines now in operation, as previously mentioned, has been located with one maximum grade of one per cent. southbound, 3 miles long, and a maximum grade against northbound traffic of approximately 28 ft. to the mile. At Mendenhall there is a Y with 6 deg. and 7 deg. curves; beyond this, there is no curve sharper than 3 deg. 30 ft., and all the curves except two or three are less than two degrees. In all, approximately 2½ miles of pile trestling will be required on this branch. Work has commenced early this year, and about five miles of track have now been laid.

The profile of the main line shows ruling grades of approximately one per cent., but these severe grades are confined to a few localities and the maximum ascents throughout the greater part of the distance do not exceed 15 or 20 ft. per mile. The most important connection is with the Illinois Central at Jackson, Miss., affording a through route to the northern markets. The New Orleans & North Eastern is also crossed at three points by the Gulf & Ship Island and its branches, and connection is made with the Louisville & Nashville at Gulfport. The Mobile, Jackson & Kansas City and the Pearl & Leaf River also enter Hattiesburg.



Four Steamers, a Ship and a Schooner Loading Lumber at Gulfport.

Gross earnings of the Gulf & Ship Island for the 11 months ended May 31, 1903, were $1,555,460, as against $1,260,107 for the same period last year. Net earnings were $579,140 in this period, as against $400,237 in the same 11 months in 1902. After deducting interest there remains the current surplus of $403,623, as against $237,428, May 31, 1902. The road is capitalized, including both stock issues and funded debt, at approximately $36,577 per mile, which does not seem excessive.

The railroad commissioners of western States who attended the recent convention at Portland, Me., made, with their friends, an excursion party of 90 or more persons, and they traveled by a special train over the Grand Trunk. On their return their route was through Boston and New York, and they spent several days in sightseeing at Philadelphia, Washington, and other cities.

Convention of Railroad Commissioners.

The fifteenth annual convention of the National Association of Railroad Commissioners was held in Portland, Me., July 14, 15 and 16. The first session was called to order by Mr. Chadbourne, of Maine, President of the Association, on Tuesday morning. The only business done on the first day was to organize and hear the report of the Executive Committee, the afternoon being devoted to sight-seeing. The only member of the Interstate Commerce Commission present was Mr. Yeomans. Mr. Sturgis represented the Railroad Accounting Officers and Mr. Ham the Street Railway Accounting Officers. The attendance of state commissioners, deputies, secretaries and clerks was quite large. The following 18 States were represented, those which have no railroad commissioners being represented by officers of other departments: Alabama, Arkansas, California, Connecticut, Illinois, Iowa, Kansas, Maine, Massachusetts, Minnesota, Missouri, North Dakota, Pennsylvania, South Carolina, South Dakota, Vermont, Virginia and Wyoming.

The second session was held on Wednesday afternoon. The first business was a committee report recommending the adoption of uniform methods of reporting cases and complaints and of reporting expenditures incurred by railroad commissions. It was also recommended that annual reports should contain a classification of equipment expenses similar to that now prescribed for construction expenses.

Mr. D. F. Palmer, Chairman of the Committee on Railroad Taxation, had been unable to get enough opinions from the members of his committee to make a report and he made a brief informal report on his own responsibility.

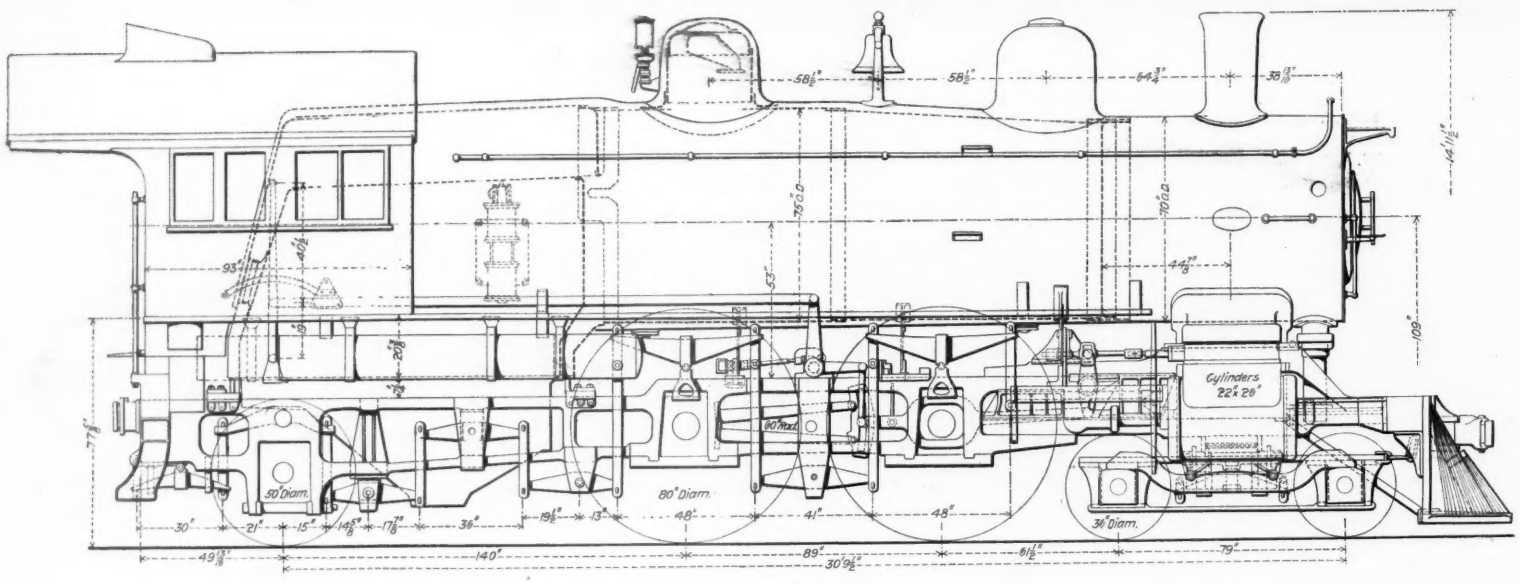
The Secretary read a paper by Mr. Moseley on the Safety Appliance Law. This paper spoke of the beneficent results of the law of 1893, quoting the statistics showing the reduction in the accident records the past two years. In view of the fact that Congress appropriates three million dollars a year to maintain the life-saving service on the seacoast, Mr. Moseley made a strong plea for better provision by the Government for the prevention of loss of life and limb among railroad employees and passengers. He closed his paper with a recommendation that the association appoint a committee of five to study the subject of block signaling and to report data on the subject, together with recommendations of the best methods of block signaling; and what, if any, legislation on the subject is needed. The association adopted a resolution in accordance with this recommendation, and appointed a committee, of which Mr. Moseley is chairman.

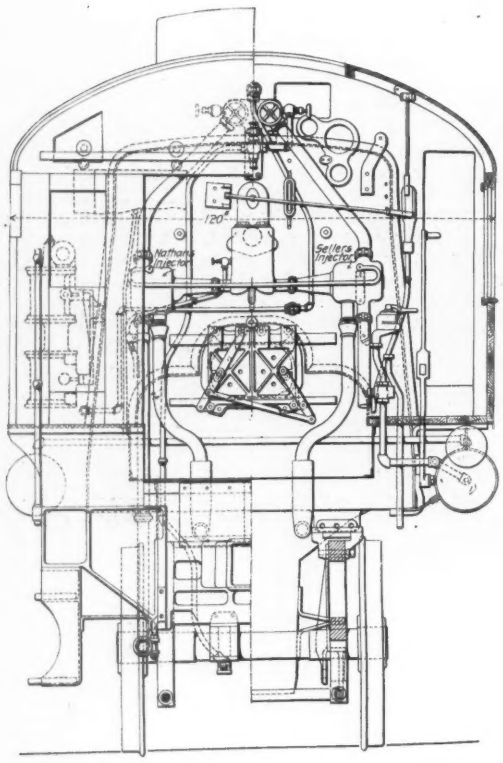
Commissioner Yeomans presented the report of the committee on uniform freight classification. The Interstate Commerce Commission has recommended uniform classification nine times, and the writer of the report holds that it is even more desirable now than it was in 1888 and 1889, when the subject was first broached. The report severely criticized the action of the railroads in changing the classification of commodities simply for the purpose of increasing rates. This was done widely on Jan. 1, 1900. Arbitrary advances in classification for the sole purpose of increasing earnings are unjustifiable on any ground. It is idle to expect voluntary action by the railroads in improving their classifications, and the committee therefore repeats the recommendation of last year that Congress, by some means, establish uniform freight classification. The committee is inclined to believe that a short bill, making this recommendation, might pass during the coming session of Congress, if it should be generally supported by railroad commissioners and shippers throughout the country. Many carriers would also probably favor such a law.

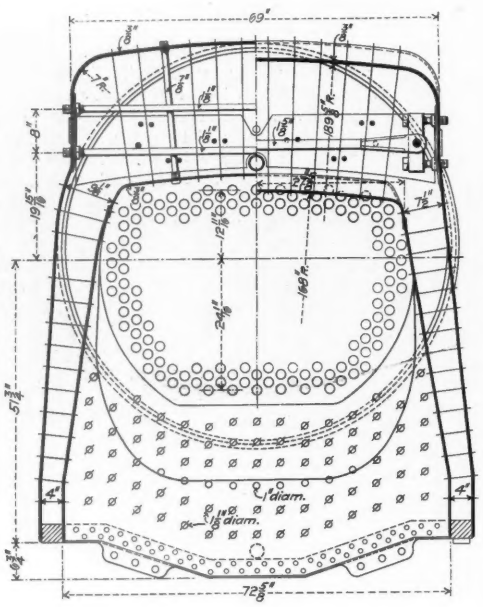
The third and final session of the convention was held Thursday afternoon. Mr. John V. Smith, of Alabama, read a paper on rate making, and Mr. Bishop, of Massachusetts, presented a report on forms for use by electric railroads in making reports to Government authorities. Mr. Garris, of South Carolina, made an argument against the adoption of uniform freight classification.

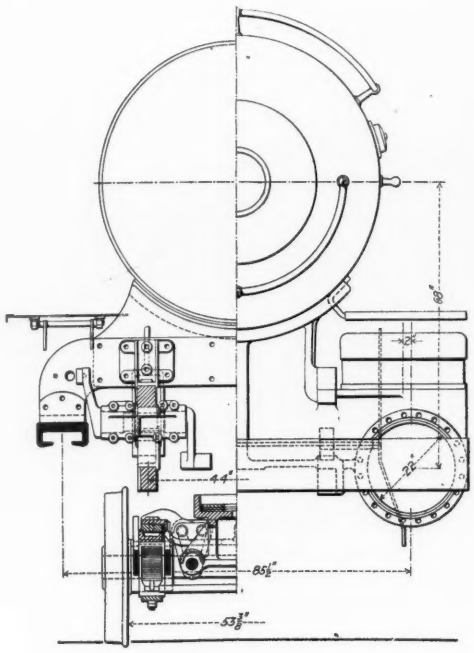
The following officers were elected for the ensuing year: President, John V. Smith, of Alabama; First Vice-President, William E. McCully, of Missouri; Second Vice-President, Ira B. Mills, of Minnesota; Secretary, Edward A. Moseley, of Washington, D. C.; Assistant Secretary, M. S. Decker, of Washington, D. C.

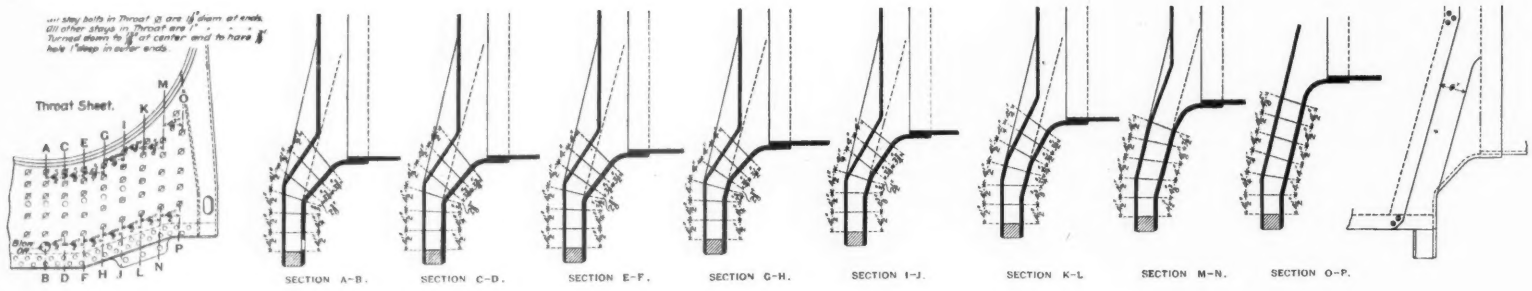
The convention next year will be held in Alabama.

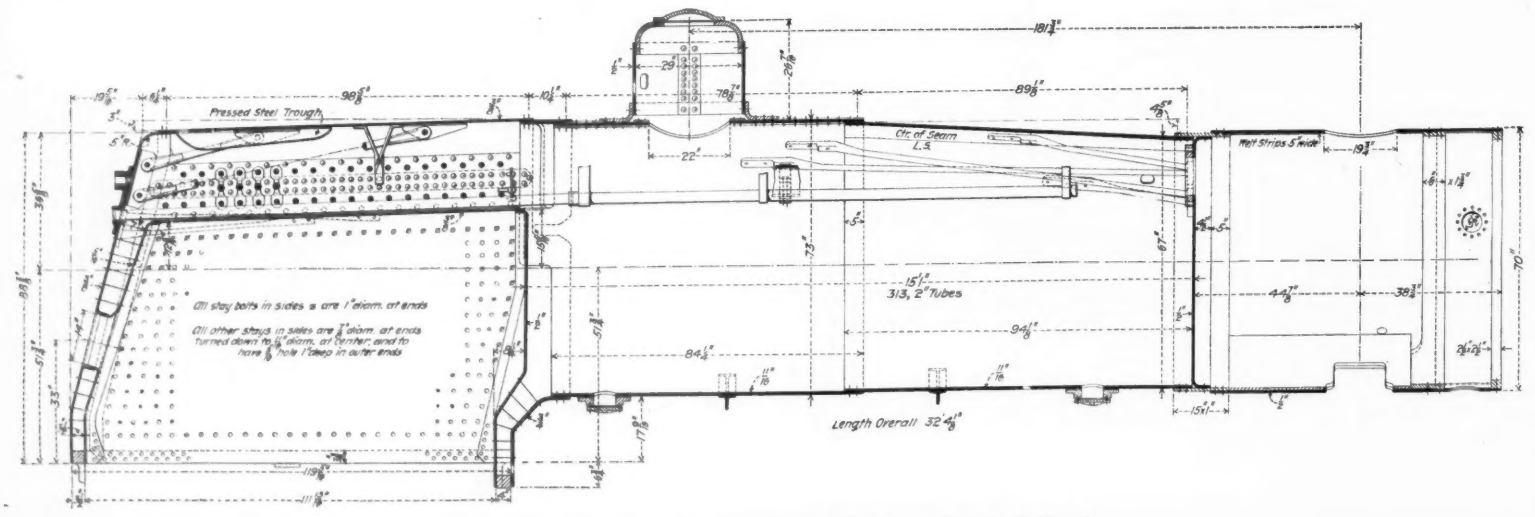












Atlantic Type (4-4-2) Locomotive for the Baltimore & Ohio Railroad.

Atlantic Type (4-4-2) Locomotive for the Baltimore & Ohio.

The Baltimore & Ohio has received a number of new Atlantic type simple locomotives from the American Locomotive Company. The road numbers will be 1,456-1,465, and the engines will be used on heavy and fast passenger trains.

In the *Railroad Gazette* Jan. 11, 1901, there was a description of a wide fire-box Vauclain compound Atlantic type engine built for the B. & O., and for comparison the following table of the principal dimensions of both types is given.

	Simple.	Compound.
Total weight, lbs.	180,000	149,600
Weight on drivers, lbs.	109,500	83,400
Cylinders, in.	22 x 26	15 & 25 x 28
Heating surface, sq. ft.	2,640	2,663
Grate area, sq. ft.	55.5	42.5

The new engine has about the same heating surface as the compound, but it is about 30,000 lbs. heavier—this additional weight being almost entirely on the drivers.

The boiler of the new engine is the Belpaire with wide fire-box and sloping back head. A notable feature of the design is the long wheel base of 30 ft. 9½ in. The distance between the rear driving axle and the trailing axle is 11 ft. 8 in.

The engine is in many respects similar to the new E2a Atlantic type locomotive recently built for the Pennsylvania (see *Railroad Gazette*, June 19, 1903). The Pennsylvania engine has the same size and type of boiler but is 3,400 lbs. lighter than the B. & O. locomotive. The weight on drivers of both engines is practically the same, but the cylinders of the Pennsylvania engine are 1½ in. smaller in diameter than those of the B. & O. machine. The maximum tractive effort of the B. & O. locomotive is 26,800 lbs.

Typical ratios of the B. & O. locomotive follow:

Wt. on drivers divided by max. tractive effort	4.08
Wt. on drivers divided by total heating surface	41.5
Heating surface divided by grate area	47.6
Tube surface divided by fire-box heating surface	13.5
Steaming capacity*	.125

The ratio of the weight on drivers to heating surface is somewhat higher than that of many other high speed passenger locomotives, but no doubt the liberal fire-box and wide spacing of tubes makes up in part for the lesser heating surface.

A general description follows:

Kind of fuel to be used	Bituminous
Weight on drivers	109,500 lbs.
Weight, total	180,000 lbs.
Weight tender loaded	133,500 lbs.

General Dimensions.

Wheel-base, total, of engine	30 ft. 9½ in.
Wheel base, driving	7 ft. 5 in.
Wheel base, total (engine and tender)	60 ft. 2 9/16 in.
Height, center of boiler above rails	9 ft. 1 in.
Height of stack, above rails	14 ft. 11½ in.
Heating surface, fire-box	182 sq. ft.
Heating surface, tubes	2,458 sq. ft.
Heating surface, total	2,640 sq. ft.
Grate area	55.5 sq. ft.

Wheels and Journals.

Drivers, number	4
Drivers, diameter	80 in.
Drivers, material of centers	Cast steel
Truck wheels, diameter	36 in.
Journals, driving axle, size	9½ in. x 13 in.
Journals, truck axle, size	5½ in. x 10 in.

Cylinders.

Cylinders, diameter	22 in.
Piston, stroke	26 in.
Piston rod, diameter	4 in.
Steam ports	20 in. x 1½ in.
Exhaust ports	20 in. x 3 in.
Bridge, width	1¼ in.

Valves.

Kind of	Richardson
Greatest travel	7 in.
Outside lap	1½ in.
Inside clearance	F, 1/16 in.; B, ¼ in.
Lead in full gear	1/32 in.

Boiler.

Type of	Belpaire
Working steam pressure	205 lbs.
Material in barrel	Carnegie steel
Thickness of material in barrel	11/16 in.
Diameter of barrel	67 in.
Seams, kind of horizontal	Butt joint, sex. riveted
Seams, kind, circumferential	Double riveted
Thickness of tube sheets	½ in.
Thickness crown sheet	⅜ in.

Fire-box.

Length	9 ft. 3 in.
Width	6 ft. 0 in.
Depth front	67 7/16 in.
Depth back	64 7/16 in.
Material	Carnegie steel
Thickness of sheets	Sides, 5/16 in.; back, 5/16 in.
Grate, kind of	Plain

Tubes.

Number	313
Material	Charcoal iron
Outside diameter	2 in.
Length over sheets	15 ft. 1 in.

Smoke-box.

Diameter	70 in.
Length	83 11/16 in.

Other Parts.

Exhaust nozzle, single or double	Single
Exhaust nozzle, diameter	5¼ in.

Tender.

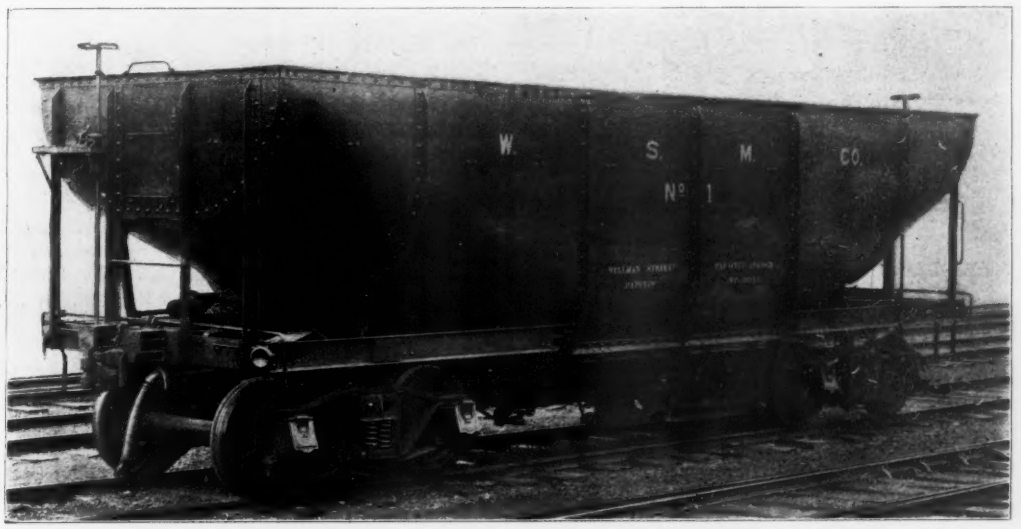
Type	Water bottom
Tank capacity for water	7,000 gal.
Coal capacity	10 tons
Type of underframe	10-in. channel
Diameter of truck wheels	36 in.
Diameter and length of axle journals	5½ in. x 10 in.

*See *Railroad Gazette* June 19, 1903, p. 440.

The Wellman-Seaver-Morgan Steel Car.

A new steel hopper car built by the Wellman-Seaver-Morgan Engineering Company, Cleveland, Ohio, under patents issued to S. T. Wellman and Clement F. Street, is shown in the illustration. It is a departure from any of the designs in common use. The object was to reduce the number of points susceptible of corrosion, to produce a car which shall be self-clearing, and also one which can be repaired at a low cost.

The center sills consist of two 15-in. channels with flanges turned in. A gusset plate is riveted to the outside of each channel and extends from one center plate to the other. An angle-iron is riveted to the lower edge of this gusset plate, giving a girder 27 in. deep at the center, and extending from truck to truck. This girder is designed to have ample strength for carrying the entire load of 100,000 lbs. The side plates are curved, and the customary form of side sill is eliminated. This curved form of plate should enable the car to clear readily, and also have the minimum lineal feet of joint exposed to load. Measurement shows this latter to be 45 per cent.



Steel Hopper Car, by the Wellman-Seaver-Morgan Co.

less than in the customary form of car. The makers claim that as corrosion begins at these points, the life of this car will be very much longer than that of any other in use.

The elimination of the customary form of side sill makes a material reduction in dead weight, which weight has been put in the plates of the car where it is believed to be more useful. These plates are 3/16 in. thick, or 1/16-in. heavier than usual practice. An important advantage claimed is the large area of door openings, which is 56 sq. ft. In many steel cars this is only from 20 to 25 sq. ft. This large door opening, together with the curved form of plate employed, should enable the car to clear readily.

The ends of the center sills are tied together by a heavy steel casting, which forms the central part of the end sills. The ends of the end sills are formed of short pieces of 8-in. channels, securely riveted to the steel castings referred to and extending to the side of the car. The push-pole socket is riveted to these channels and also to a short 8-in. channel, which extends from the corner of the car to a heavy steel casting riveted to the side of the car close to the door opening. This construction is further stiffened by two angle irons extending from the corner of the car back to the body bolster near its junction with the center sills. Damage to steel cars is often caused by corner blows, and this construction is designed to enable the car to be easily repaired. The idea is that under a corner blow the only parts receiving damage will be the channels and angles referred to. As these are commercial shapes they can be readily renewed, or if not too badly damaged can be straightened and replaced.

This car was exhibited at the Master Car Builders' convention at Saratoga, and was inspected by a large number of the members. It is now in use at a point where it will be subjected to severe service.

Tests of Cast Steel Locomotive Parts on the Northern of France.*

BY M. DU BOSQUET.

Chief Engineer of Motive Power and Equipment.

In October, 1893, the Northern of France purchased for an eight coupled locomotive the following cast-steel parts: Driving boxes, eccentric straps, cross-heads, guides, equalizer fulcrums, links, equalizing beams, guide bearers. The castings were obtained from the Creusot Works without any specification as to tensile strength or elongation. All of these parts have given satisfaction and are still in service after nearly eight years. The engine went into service in May, 1895, and up to March 1, 1903, had made 200,000 miles. The wear of the cast-steel parts has been slight, none of the bearings have worn enough to require bushing, and the boxes and equalizers have not shown any sign of fracture, all the wearing surfaces are good and the guides have not required repairs.

Encouraged by these results the company ordered a pair of front coupling rods for a similar eight coupled engine of the same class. An extra rod was furnished for testing. This rod stood without breaking 17 blows from a trip of 1,100 lbs. weight, the drop being for the first 12 blows 19⅝ in., for the next blow 30 in., for the 14th, 15th and 16th blows 39 in., and for the 17th blow 78 in. On the 18th blow, with a drop of 9 ft. 10 in., one of the forks of the big end broke. The rod was then placed under a steam hammer and bent until the ends were within 8 in. of each other. Tests made on samples cut from near the ends showed an average tensile strength of 73,100 lbs. per sq. in., and an average elongation of 25 per cent. in 4 in. The specifications called for a strength of from 64,000 to 71,000 lbs. per sq. in., and an elongation of from 20 to 15 per cent. Finally two machined bars 1 3/16 in. square were subjected to a drop test. The supports were placed 6¼ in. apart and a weight of 55 lbs. was dropped from heights increasing by 2 in. at first and then by 27 in. The weakest bar broke under a drop of 78 in.

The two other rods were put in service in February, 1902, and after 13 months service show no signs of trouble. The engine has made 22,800 miles.

After seeing the cast-steel crank axles exhibited at Dusseldorf the Northern ordered two from the Annen Works, one for a mixed service engine, and the other for a six-coupled compound. The specifications called for a tensile strength of from 64,000 to 75,000 lbs., with a minimum elongation of 15 per cent. The tests from the axles showed respectively strengths of 68,300 and 79,600 lbs., with elongations of 23.1 and 22 per cent. The drop test required bars 1 3/16 in. sq. on supports 6¼ in. apart to stand without breaking 15 blows from a 55 lb. trip dropped 78 in.

After successfully standing this test four test pieces were bent in a press to the breaking point, which was met with when the bars were bent to an angle of 5 to 10 deg. A fifth test piece stood the following without breaking, the blows being delivered on alternate sides of the bar:

16 blows from a height of	78 in.
8 blows from a height of	118 in.
11 blows from a height of	158 in.

The sixth test piece stood 15 blows from 78 in. and broke at the 16th blow from 158 in. These axles cost respectively 1.3 and 1.4 cents a pound, while forged steel axles of the same type cost 2.8 and 3.3 cents a pound. The forged steel axle for the compound engine weighs 2,000 lbs., and the cast-steel axle weighs 2,500 lbs., the difference being due to the fact that in the casting the eccentrics are in one piece with the axle. The axle for the other engine weighs 1,410 lbs. in forged steel and 1,430 lbs. in cast-steel.

Finally the Northern has ordered for their double end suburban engines a number of steel castings for the rods, valve motion, and brake work. The specifications are:

1. For pistons, guides, links, valve stems with yokes, and parts subject to wear: Minimum tensile strength, 80,000 lbs. per sq. in.; elongation in 4 in., as great as possible.

2. For other parts: Minimum tensile strength, 64,000 lbs. per sq. in.; minimum elongation in 4 in., 15 per cent.

The use of cast-steel in place of wrought-iron or steel has reduced the cost of these parts about 45 per cent.

*Translated from the Revue Generale des Chemins de Fer, July, 1903.

The movement of fruit eastward from Sacramento, Cal., now amounts to 100 cars a day.

The Street Railroads of Berlin.

The street railroads of Berlin are justly famous for their efficiency and completeness. The leading company, the so-called "Grosse Berliner Strassenbahn," has recently completed the change of power to electricity, and celebrated the occasion by the publication of a comprehensive history of its operations during the past 30 years. On the basis of this history and of the railroad's annual statements the "Zeitschrift für Kleinbahnen" for June, 1903, constructs a number of interesting tables.

This great street railroad company, analogous to the Interborough Rapid Transit Co. of New York, owns or leases the largest part of the street railroad system of the German capital. It was chartered in 1871, began operations in 1873, and has had its charter renewed in 1884 and again in 1898, the charter of the latter year extending to 1919. Important consolidations with other railroads took place in 1886 and in 1900. Electric power was introduced in 1896, and slowly applied to the entire system.

The following figures illustrate the above development.

	Mileage.		Mileage.
1875	46	1890	210
1880	80.8	1895	202
1885	121		
	Mileage electric lines.		Mileage electric lines.
1896	20.8	1900	213
1897	21.8	1901	290
1898	70.9	1902	299
1899	120		

The last figure should read 406 miles, if the leased lines are taken into account.

The capitalization of the railroad has kept pace with its growth. Its stock outstanding has increased as follows:

1872	$357,000	1898	$10,500,000
1876	2,860,000	1899	16,000,000
1881	4,070,000	1900	16,500,000
1894	5,040,000	1901	20,400,000

In addition there have been various bond-issues, of which $5,230,000 are outstanding.

The familiar picture is presented of an enormous growth in the traffic of the surface lines. The number of passengers carried has increased as follows: 51 fold in 28 years.

	No. pass. (in mill.).		No. pass. (in mill.).
1874	5.75	1895	157
1875	15.3	1900	236
1880	47	1901	282
1885	83	1902	295
1890	135		

The great increase between 1900 and 1901 was due to the reduction in the tariff. The rates charged are not uniform, but vary with the distance traveled, so that the following figures indicating the average rates do not necessarily mean that the decline is solely due to a reduction in the fares charged; a decline in the average length of trip would have the same effect.

	Aver. fare, cts.		Aver. fare, cts.
1874	3.48	1901	2.24
1880	3.06	1902	2.19
1900	2.47		

The number of passengers has increased more rapidly than the amount of car-mileage; that is, the density of travel has increased.

	Car-miles (mill.).		Car-miles (mill.).
1876	2.36	1901	40.8
1900	35.2	1902	41.9

The gross revenue has also increased less rapidly than the number of passengers.

	Gross revenue.	Operating expenses.	Per cent. of gross revenue.
1874	$202,000	...	...
1901	6,450,000	4,020,000	62.3
1902	6,590,000	3,580,000	55.4

The business of the company has been profitable, as is seen from the following table of dividends distributed:

	Per cent.		Per cent.
1874	4.75	1898	18
1875-90, rise to	12.5	1899	10.5
1890-5, per annum	12.5	1900	11
1896	15	1901	7.5
1897	16	1902	7.5

The successive charters provide minutely for the payments to be made to the city treasury by the railroad company. Since 1871 these payments have aggregated $22,300,000.

	Payments to City of Berlin.		Payments to city of Berlin.
1880	$54,700	1899	$419,000
1889	247,500	1901	471,000
1898	345,000	1902	488,000

Difficulties With the Quadruplex.

"Why is it that so few long telegraph circuits are now worked 'four-cornered?'" In view of the fact that large copper wires now replace the old iron conductors, and telegraph apparatus generally is constructed for better results, this question is certainly worthy of due consideration. We need not go back more than 10 or 12 years to arrive at the period when nearly every quadruplex circuit of 400 miles in length was worked "four-cornered," and exchanged as many as 1,200 or more messages daily, and over a 4 or a 6 gage wire at that. Where can we find a long quadruplex circuit to-day that will carry so great a volume of business?

It is not because we do not have operators proficient enough to handle it, for with our code words and the typewriter old timers' records should be beaten easily. Neither is it true that operators of to-day are less ambitious than their earlier brothers. Nevertheless, the fact stares us in the face that long circuits do not give the satisfaction that they did years ago, and the passing of the present standard quadruplex, as a "four-cornered" device on long circuits, while not officially admitted, is certainly pretty well recognized by all who have the handling of them, as only a matter of time.

Many factors have contributed to bring this about. There is no relief except to devise some other method which will employ apparatus less susceptible to existing influences than the neutral relay now in use.

The electrical conditions of the atmosphere in the immediate environments of our great trunk line poles of many parallel wires and cable, both underground and aerial, are to-day such that each separate conductor and relay coil therein is very much in the position of the armature of a dynamo rotating in a magnetic field. The only difference is that in the case of the pole wires the conductors are stationary, while the density of the field fluctuates, and the electromotive force generated is comparatively feeble.

Years ago the number of parallel circuits and cables extending along one route was comparatively small, while trolley line disturbances and the churning of the electrical conditions by the rapid breaking of currents in rapid automatic circuits was a minimum quantity, hence the aerial "field" was then too weak to generate a formidable foe within the wires. To-day, however, the immediate surroundings of a pole of wires is a dense, seething magnetic field capable of causing so great a counter electromotive force in each separate conductor, as the currents, therein together act and react upon each other, that the working margin of a neutral relay is reduced to a point below that required for its proper operation. This fact was demonstrated to the satisfaction of the writer by noting the different results obtained in several quadruplex circuits when balanced at certain stated periods.

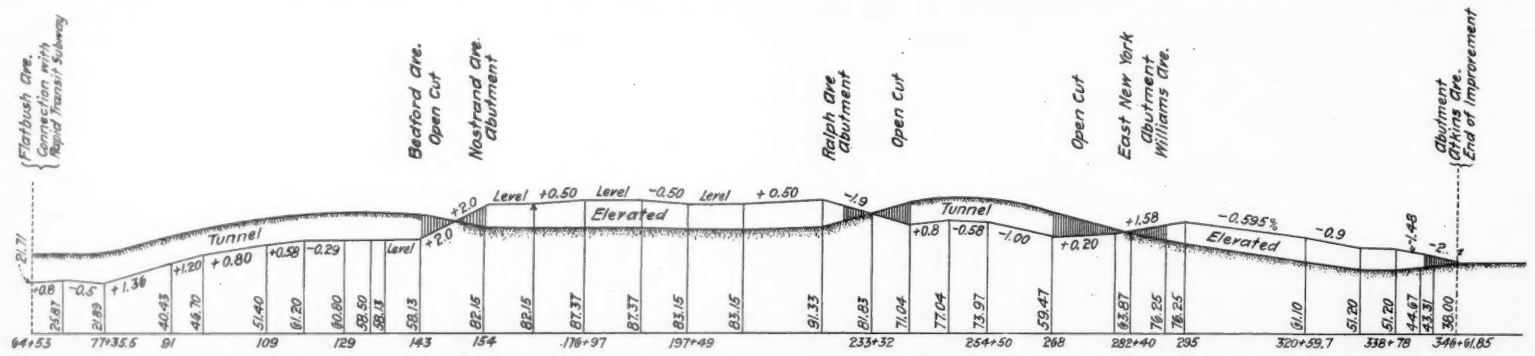
On a certain trunk line particularly affected by inductance it was found that each circuit selected for the experiment would "quad" in a first class manner at 8 o'clock in the morning, or earlier, and all day on Sundays, but gradually grew less efficient on week days as the morning advanced, until by 10 or 11 o'clock the B side was either useless or required so much attention that it would be impracticable to attempt to work it. This could mean but one thing, and that was, that when all circuits, including the automatic, began their electrical bombardment, the quadruplex circuits under observation were unable to cope with their antagonists, and at the same time supply the neutral relay with its full quota of current. This is no doubt the true explanation of the difficulty experienced in quadruplexing long circuits.

Short circuits are not disturbed to any great extent for the reason that, although the strength of the current required to operate them is the same as on long circuits, there is not so great a length of wire in the pole line "field" to be acted upon, hence, like a short coil armature in a dynamo, there is less counter electromotive force generated to disturb normal conditions.

Another point noted was that wires running east and west seem to be affected to a much greater extent than circuits of similar length and apparently like conditions extending north and south. In fact, the long southern quadruplex wires are still giving satisfaction as "four-cornered" circuits in spite of a noticeable increment of the electrical disturbances mentioned.

This brings up another question: Does the magnetic belt of the earth play any part in the phenomenon? Theoretically it does. The magnetic lines of force in this belt run north and south, hence they are in parallel with those surrounding the wires running east and west, because such lines of force in the latter arrange themselves at right angles to the direction of the current flowing in the conductors. The magnetic field surrounding such conductors, therefore, is obviously strengthened to the extent of the value of the earth's like forces. On the other hand the lines of force surrounding conductors running north and south clash with the belt line, with the result that the total field is weakened.

Can any of our readers offer a more plausible explanation of the phenomenon? If so it might be worth publishing for the benefit of others who may have become interested in the subject.—*W. H. Jones in The Telegraph Age.*



Profile of Atlantic Avenue Improvement—Long Island Railroad.

Progress of the Atlantic Avenue Improvement of the Long Island Railroad.

The general scheme of the improvements undertaken by the Long Island Railroad to get its tracks off grade on Atlantic avenue, Brooklyn, involves two concrete subway sections and two elevated sections. As described in our issue of April 25, 1902, the total length of these four sections is approximately 4⅘ miles, of which about 8,100 ft. is two-track elevated structure, about 6,600 ft. is four-track elevated structure, about 9,300 ft. is subway, and the remainder open-cut or transition grade between subway and elevated. The remarkable feature of the work from the standpoint of ordinary railroad building is that the total vertical distance traversed throughout the five miles in which these four sections have been built is only about 60 ft., so that the curious spectacle is presented of a railroad carried through two subways and upon two elevated structures, on a right-of-way where the previous grades were practically negligible for passenger traffic. The accompanying profile shows the situation clearly. The names of the avenues which cross the right of way at transition points between subway and elevated structure are given for purposes of location.

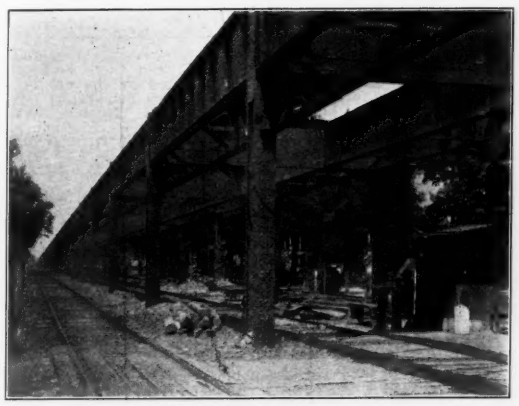
South Wall, East Approach; Showing Seepage.

The greater part of this work, which is now nearing completion, may be said to have been a little ahead of actual requirements, since trains will not be run through the subway section No. 1 at the west end of the work for the present, and probably will not be run through subway section No. 3 until the electrification is completed. Ultimately, a through connection will be afforded with the New York Rapid Transit subway system, by means of the East River tunnel, for which borings are now being made. The terminal station will be located in the same place where the present terminal now stands; at the corner of Atlantic and Flatbush avenues, Brooklyn. But the plans for the new structure have not yet been

approved, and it is a safe statement that it will be fully two years before any trains are run through from Jamaica —which is the general Long Island Railroad junction, about nine miles from Brooklyn—to New York City. In the meantime, steam trains will be run over the elevated portions of the Atlantic avenue improvement and the tracks will be carried along the avenue at grade above and at one side of the subway, which will therefore probably remain idle for a year or so after its completion.

The photographs show that a greater part of the work is now practically completed, except at the west end of the first subway section, adjoining the terminal station. The west section will doubtless be done last, when the line is ready for electrification, and for connection with the New York rapid transit subway. Contracts for the terminal will probably be let some time this fall or next winter.

About four years ago the Brooklyn elevated line was connected with the Long Island tracks by means of a 2½ per cent. grade at what is now known as Carlton avenue freight yard. At this point the Long Island tracks will in the future be depressed, so that the connection will involve a 5 per cent. grade. It is thought that the light Brooklyn elevated third-rail trains can be operated over this grade without serious difficulty, however, except possibly during snow or ice storms in the winter time, when the traffic is very light.



Troy Avenue.

An agreement has been made with the Brooklyn Rapid Transit Company to abandon its tracks on Atlantic avenue, between Washington avenue and Flatbush avenue, during the progress of the work on the first section, since the building of the subway and the consequent shifting of the steam railroad tracks requires the use of nearly the full width of the avenue. After the subway is completed the strip of land above it will probably not be used for public traffic but will be sodded or otherwise improved, since there is a clear 21-ft. driveway on each side.

Taking into consideration the many minor engineering problems which have been met, and the size of the contract, involving over 2½ millions of dollars, exclusive of the cost of electrification, the work has presented no abnormal difficulties, since the material excavated is, in the main, good gravel with little loam and no solid rock, although enough stones and bowlders have been taken out to furnish approximately half of the broken stone used in the concrete mixture. There is a place in section 1 where it has been necessary to leave a hump to provide for the shifting of the tracks which handle existing traffic, and for an avenue which crosses the subway. The hump makes a grade so steep that, for the present the spoil cars cannot be run up and down and the excavated material will be handled on a wire trolley, similar to the method employed in the New York rapid transit subway. With most of the excavation, however, it has been possible to load the spoil direct on work cars, to be hauled out for use on other portions of the Long Island Railroad.

Subway sections 1 and 3 are alike in the general design. At present, however, different methods of bracing are employed. In section 1 there is a transverse brace supporting the side sheathing at 15 ft. intervals, with spur braces at the ends which split the panels into two

Looking East from Franklin Avenue.

7½ ft. parts, as illustrated by one of the accompanying photographs. The vertical distance between successive ranges is about 5 ft. In section 3 the bracing timbers are 8 in. x 8 in., instead of 6 in. x 6 in., and are 10 ft. apart instead of 15, but without spur braces. The vertical space is about the same.

After the previous description of the subway it is not necessary to go into a detailed description of the design, further than to say that the structure is built of 1-3-5 concrete with an arched invert at the bottom 12 in. thick at the center. The roof is made of I-beams with arched concrete in between, and is waterproofed with a layer of roofing felt and pitch. For the greater part of the length of the subway drainage is provided for by leading the water back until it flows by gravity into the city sewers. Where this is impossible, there are drainage pits 3 ft. x 6 ft. x 4 ft. in the central drainage trench. These pits are pierced with holes at the sides and will permit free seepage through the porous soil at both sides and bottom.

The maximum grade on the whole improvement work occurs at the east portal of section 1, where the tracks are run on the elevated structure at a 2 per cent. incline for a distance of about 800 ft. from the subway level to the summit of the vertical curve. The retaining walls between the two sections are of concrete, proportioned 42 to 100, thickness to height, with a granite coping on top. At the east end of the elevated structure which constitutes section 2, the vertical clearance was so limited that the structure is of through plate girders, with a trough floor. Elsewhere deck girder spans are used.

The minimum clearance below the elevated structure is 14 ft., and the maximum, 4 or 5 ft. greater. Track laying will begin on this section in a week or so, with 100-lb. rails. The third rail, for electrification, will not be laid at present, as the design has not yet been decided upon. The Long Island Railroad is doubtless willing to have the New York and Brooklyn elevated lines experiment a little before it proceeds with the work. The columns which support the structure rest on concrete pedestals about 5½ x 8½ ft., and the soil beneath, as already stated, is firm gravel. The structural work on section 2 is now completed except for five or six spans at the east end.

The approach to subway section 3 is made with a 1.9 per cent. grade. The exterior work on the subway part of this section is nearly finished. Besides the subway, however, the section has about 1,300 ft. of open cut, the west end of which is about completed, with concrete retaining walls as shown in one of the photographs. At the other end, only about one-third of the cut is finished.

Section 4 is a four-track elevated structure 6,600 ft. long. In addition to the two passenger tracks, two freight tracks are carried up from the small yard at Manhattan Beach crossing. At present, this crossing, coming as it does at the transition between subway and elevated structure, will remain at grade; but it is probable that the Manhattan Beach tracks will also be elevated before many years, in which case the main line east would pass beneath them. The approach to the elevated portion of section 4 is ballasted with excellent broken rock 8 in. deep beneath the bottom of the ties, and carried out on either side. The trestle is laid with 100-lb. rails similar to the remainder of the improvement work, and these rest on creosoted ties placed 14 in. center to center. On a line where traffic is to be so heavy, it is important that renewals should be made as seldom as possible, and it is estimated that the creosoted timber will last 20 years. The treating was done by Eppinger & Russell, at Long Island City. Trains are now running over section 4, and the manner in which it carries its load is eminently satisfactory. There is a marked absence of vibration and noise.

The work, as a whole, takes out some 36 vehicle and railroad crossings, exclusive of numerous foot-paths in between. The highway crossings have previously been protected by gates, but it has been necessary to run very slowly and this part of the run has been very much disliked by engineers, since there is constant chance of heedless pedestrians or of stray animals getting on the track. The total number of crossings removed, including the foot-paths, scarcely less dangerous than the highway crossings,

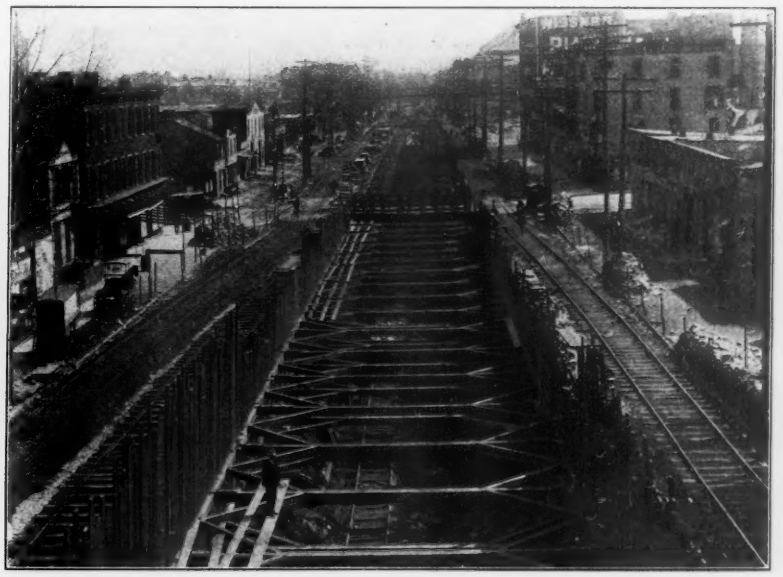
Looking East from Portal—Bedford Avenue.

cannot be much less than 60, in the five miles traversed.

No attempt has been made in the present article to describe anything except the progress of the principal engineering features of the work. A large number of problems of greater or lesser magnitude have been successfully met, day after day and week after week. For example, the north wall of the concrete subway masonry is flanked by a 48-in. water main, and to provide against a possible calamity, the entire wall is strengthened against hydrostatic pressure by Ransome, ¾ in. twisted steel rods, placed 2½ ft. apart. Another difficulty was the management of the numerous street railroad crossings, particularly in view of the fact that in two or three places it was necessary to change the grades of the transverse streets and avenues. It is a significant commentary on the great amount of engineering work now being done in New York that a job of this size should receive practically no attention in the daily papers or elsewhere, and it is probable that the average layman living in New York City has but a very indistinct idea of what is comprehended by the term Atlantic avenue improvement.

The surveys and plans for the work have been executed under the supervision of Mr. J. D. Davies, of the firm of Jacobs & Davies. The resident engineer in charge is Mr. George Sergeant, Jr. For the photographs, and for assistance in the preparation of this article we are indebted to the courtesy of his principal assistant, Mr. L. J. Carmalt.

Bedford Avenue—Open Cut.



Atlantic Avenue, near Grand; Looking East.

RAILROAD GAZETTE

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PUBLISHED EVERY FRIDAY
At 83 Fulton Street, New York.

EDITORIAL ANNOUNCEMENTS.

CONTRIBUTIONS.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

ADVERTISEMENTS.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and these only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

This issue of the *Railroad Gazette* contains three significant pieces of intelligence concerning the block system. The first is the Government record of the enormous losses resulting from collisions. This is not cheerful reading, for it is simply a marshalling of necrological arguments for the space interval. The second item is to be found in the report of the meeting of State railroad commissioners in Portland, where a committee was appointed to investigate and report on the block system. This national association of commissioners has not yet won the laurel crown for great accomplishment, but has aimed rather at genial comings together in hot weather in a prohibition State where for cooling drinks they do not "pay tithe of mint and anise and cummin." Nevertheless their new committee will have great opportunity for good, and some power to exercise it. It will have the opportunity to get facts about the block system, and use them more forcibly than has yet been done. The third item is the announcement that the Northern Pacific has put the block system in use on the 343 miles of its line from St. Paul to Jamestown. The first item may perhaps be called basic; and the second may or may not furnish sinews for reform; but the third marks real progress.

Preventable Collisions of a Year.

The number of collisions on the railroads of the United States in the year ending March 31 last was 5,858 (as reported in the Interstate Commerce Commission Quarterly Bulletins) and the casualties and damages were as here shown:

	Collisions.	Loss.	Kil'd.	Inj'd.
April-June, 1902.....	1,094	$902,347	79	915
July-Sept., 1902.....	1,434	1,250,628	148	1,539
October-Dec., 1902.....	1,680	1,524,448	176	1,891
Jan.-March, 1903.....	1,650	1,486,513	211	1,782
	5,858	$5,163,936	614	6,127

This is not the first yearly statement that has been made; but this bulletin (No. 7) reprinted on another page is the first one that makes it possible to present a 12-months exhibit of causes; and such an exhibit is given in the double-column table shown herewith.

It is a little more than one year since the Interstate Commerce Commission published the causes of 27 butting collisions, costing 70 lives and $306,511 damage to cars and engines, all occurring within three months. On July 18, 1902, an analysis of this table of causes was published on the first page of the *Railroad Gazette*, with some comment on the "reproach to the country" which the Commission said was implied in such a record of loss and disaster. The twenty-seven causes were only samples of hundreds of others, the total number of collisions during that quarter being 1,481, and the total damage to cars and engines in collisions $1,339,813. The four quarterly tables published by the Commission give causes of 92 collisions (out of a total of 5,858). Of these 92 there are 26 collisions (deaths 33; injuries 170; cost $341,538) due to causes which cannot be briefly classified; but the other 66 (causing 178 deaths and 599 injuries and costing $633,030) may be readily grouped under the three headings. The significant columns are those under *B*, showing 50 collisions, killing 130 persons and injuring 447, and costing over half a million dollars (not to mention other hundreds of thousands paid in damages) which were directly due to faults in the time interval plan, or in its administration, and which therefore may be classed as being preventable by the substitution of the space interval for the time interval: 50 collisions, 130 deaths, half a million in money. These figures merely serve as a measure, and the crudest measure, of this defect in our civilization. Perhaps the matter may be put in a more significant aspect by looking at the record as a blemish on the reputation of the railroad profession of America, and by considering the cloud—small though it be—which it throws on the pleasure of every passenger's journey over the lines where disasters of this kind occur. The measure which we have cited is also imperfect in that the figures are partial; all the collisions of cally the same now as a year ago. The collision record shows no decrease and, with one exception, it does not appear that any road has materially improved its discipline. The exception is the Southern Pacific. That company has tested a large number of its enginemen and, according to the reports, has found it necessary to suspend 30 or more, in California, for disobeying stop or caution signals. This is good work, but it gives no light on practice generally.

The *A* column in the table is a reflection on the management of certain roads, but the presence of items in this column does not weaken the plea for the adoption of the block system which is based on Column *B*, and it would not do so even if the list in *A* were much longer than it is. Of some of the collisions in Column *A* the causes have been published in sufficient detail to show that the block system in that instance was not rightly managed; and no one denies that strict obedience is essential to the complete success of any system. The main argument remains; that the block system is the best system, whatever the management. Column *C* may be added to *A;* the aggregate is still far below that of *B;* and

CLASSIFICATION OF CERTAIN COLLISIONS—APRIL 1, 1902, TO MARCH 31, 1903.

	A: Occurred on lines where block system is in use. Item.	Kil'd.	Inj'd.	Loss.	B: Apparently would not have occurred if the block system had been in force. Item.	Kil'd.	Inj'd.	Loss.	C: Would not have been prevented by the use of the block system. Item.	Kil'd.	Inj'd.	Loss.
Bulletin No. 4—												
	22	1	3	$9,800	2	..	..	$1,200	1	2	1	$400
	..	..	..	...	3	2	6	2,100	4	..	..	2,868
	..	..	..	...	6	2	34	4,800	17	1	3	8,090
	..	..	..	...	9	2	14	5,200	..	..	..	...
	..	..	..	...	10	..	2	5,400	..	..	..	...
	..	..	..	...	11	..	3	5,800	..	..	..	...
April, May, June, 1902	..	..	..	...	12	..	..	5,815	..	..	..	...
	..	..	..	...	13	1	6	5,859	..	..	..	...
	..	..	..	...	18	..	..	8,000	..	..	..	...
	..	..	..	...	20	..	9	9,000	..	..	..	...
	..	..	..	...	21	5	4	9,300	..	..	..	...
	..	..	..	...	24	4	27	18,700	..	..	..	...
	..	..	..	...	26	..	4	37,000	..	..	..	...
	1	1	3	$9,800	13	16	109	$118,174	3	3	4	$11,268
Bulletin No. 5—												
	m 4	4		$12,000	b	5	1	$800	..	..	..	...
	w 1	1		14,000	d	13	17	3,700	..	..	..	...
	..	..	..	...	j	1	5	11,148	..	..	..	...
	..	..	..	...	l	2	4	11,800	..	..	..	...
July, August, September, 1902	..	..	..	...	o	1	69	14,000	..	..	..	...
	..	..	..	...	p	3	2	14,918	..	..	..	...
	..	..	..	...	q	1	4	16,000	..	..	..	...
	2	5	5	$26,000	7	26	102	$72,366	..	..	..	...
Bulletin No. 6—												
	16	1	28	$9,000	3	..	3	$2,166	1	2	..	$994
	21	1	..	11,350	5	2	5	3,000	7	2	8	4,000
	..	..	..	...	10	2	2	5,175	8	..	1	4,050
	..	..	..	...	12	..	2	6,000	..	..	..	...
	..	..	..	...	13	1	1	6,700	..	..	..	...
	..	..	..	...	14	27	15	6,889	..	..	..	...
	..	..	..	...	15	1	8	7,000	..	..	..	...
October, November, December, 1902	..	..	..	...	17	..	18	9,980	..	..	..	...
	..	..	..	...	22	1	5	12,400	..	..	..	...
	..	..	..	...	25	1	5	12,600	..	..	..	...
	..	..	..	...	26	7	..	13,838	..	..	..	...
	..	..	..	...	27	2	2	13,962	..	..	..	...
	..	..	..	...	31	1	27	20,651	..	..	..	...
	..	..	..	...	32	2	23	25,800	..	..	..	...
	2	2	28	$20,350	14	46	116	$146,161	3	4	9	$9,044
Bulletin No. 7—												
	8	4	3	$3,095	1	1	..	$285	7	2	..	$2,800
	14	1	1	6,163	2	7	7	1,700	15	23	85	7,000
	16	3	14	7,400	3	..	2	2,000	..	..	..	...
	..	..	..	...	5	12	14	2,500	..	..	..	...
	..	..	..	...	6	..	..	2,500	..	..	..	...
	..	..	..	...	10	..	2	4,550	..	..	..	...
	..	..	..	...	11	2	15	5,500	..	..	..	...
	..	..	..	...	12	..	2	5,600	..	..	..	...
January, February, March, 1903.	..	..	..	...	19	..	3	9,200	..	..	..	...
	..	..	..	...	20	2	2	9,510	..	..	..	...
	..	..	..	...	22	5	..	10,400	..	..	..	...
	..	..	..	...	24	1	1	11,718	..	..	..	...
	..	..	..	...	28	2	19	15,000	..	..	..	...
	..	..	..	...	29	..	2	16,496	..	..	..	...
	..	..	..	...	30	2	21	17,000	..	..	..	...
	..	..	..	...	34	8	30	79,450	..	..	..	...
	3	8	18	$16,658	16	42	120	$193,409	2	25	85	$9,800
Totals, 12 months...	8	16	54	72,808	50	130	447	530,110	8	32	98	30,112

lesser importance are in this statement passed over without notice.

In the *Railroad Gazette* analysis of a year ago, emphasis was laid on the lack of supervision and instruction of conductors and enginemen, and lack of inspection of their conduct. The article started out with the assumption that our method of running trains—by watches, time-tables, despatchers' orders, flagging and torpedoes—is right and sufficient, and that what is needed to prevent butting collisions is a better enforcement of the rules. To change the method (by adopting the block system) was only incidentally mentioned. This assumption concerning causes was, of course, only an assumption; for, as everybody knows the remedy which has actually been adopted on many roads for the prevention of collisions has been the block system. It has been deemed more practicable, and presumably more economical, to change the system, which can be done in a few weeks or months, than to rely alone on discipline, which can never be made perfect. Either system demands good discipline, but the block system is far safer than the other on the basis of unchanged discipline. If the frequent occurrence of collisions under the time interval system is, as was asserted, due to lax discipline; and if this primary deficiency in discipline is the lack of inspection, the obvious conclusion is that the conditions are practi- the obvious comment is that an inefficient personnel can neutralize the benefit to be derived from any system.

Neither is the case weakened by the fact that the Government bulletin also includes the remarkable disaster at Westfield, N. J., which occurred on a block-signaled road. At Westfield the flagging system also failed. If the flagman had actually gone back 4,000 ft. and had put torpedoes on the rail that far back, there could have been some argument in favor of the flagging system; but torpedoes are as practicable with block signals as with the flagging system. A significant item in the Government's record of the Westfield case is the statement that the road had no periodical examination or test of enginemen.

The last bulletin also shows in detail the causes of two other collisions, Items 34 and 3, which serve to relieve the block system of the odium of Item 15 (Westfield) if relief is necessary. The butting collision (Item 34) was due to a complication of causes beside which the problem of the Westfield case would be called by most superintendents quite simple. The rear collision (Item 3) was caused partly by an attempt to make the time-interval system accomplish the impossible, and partly by a kind of negligence that railroad officers have been trying for 50 years to cure, but which still remains to vex us.

The Citizen's Attitude Toward Trade Union Crimes.

In another column an esteemed correspondent again asks who taught trade unions to be bad, and, although he prefers to conceal his identity, it is fair to mention that he has a standing which entitles him to a respectful answer. Whether or not the trades union crimes are more or less "flagrant, burning and outrageous" than those of some corporate officers, is liable, in its decision, to be largely affected by the prejudices and emotions of the foolish person who would undertake to decide it. A comparative estimate of quantities of flagrancy, burningness or outrageousness is not within the scope of instruments of precision, and varies with the personal equation. The correspondent answers his second question and makes it quite clear that the comparative badness of stealth and of brutality is a matter of taste, which is not discussible. But, as between labor trusts and corporate trusts, Inquirer's question: "Who began it?" suggests an interesting, even if profitless, investigation.

One of the trusts of Bible times was that of Joseph, who "gathered up all the food of the seven years which were in the land of Egypt," and sold it later with something a little beyond discretion and to secure personal ends. The control of the winepresses, as told in profane history, was perhaps a more exact precedent, and, although there was nothing especially flagrant in those operations, nevertheless employers' trusts appear to hold the age. In corporate form, the trust idea is quite modern, while the comparative antiquity of the lawlessness of labor trusts is easily ascertainable by Inquirer if he will glance through the long list of British Board of Trade and Parliamentary papers on this subject. The simplest form of answer is sometimes complete. When the writer was riding up a narrow mountain road, he asked the driver: "What do you do when you meet another team here?" The answer was: "They ain't any." No one taught trade unions to be lawless; they were.

Attention is given to this correspondent's letter because it is typical of the method of thinking of a large class of worthy people: a critical attitude toward those who are trying to better a social condition, because there are also other bad conditions that need attention; and also because a very small number of those injured are impure, and therefore may not "talk about right, law, duty and the like." If the record of hundreds of years proves anything, it is that strikes are inseparable from violence. The exceptions are unusual and not typical. Unchecked violations of law, and prevalent lack of reverence for the law, operate not only as a check to prosperity, but they are a real danger to government.

It is idle to even mention in this connection that some corporate officers have violated law and that therefore it is unbecoming in them to "talk about right." They are few in number although they have undoubtedly great power for evil, but the community is not at all concerned about their complaints of the effect of trade union lawlessness upon their own lawless undertakings—if any such complaints have ever been made. In enforcing the United States and the State laws governing corporations, especially railroad corporations, the courts need at present no prodding by the "brains, culture and wealth of the country." The Northern Securities case is a conspicuous example of the line of decisions making a strict construction of the limitations of corporations subject to national laws; while the courts of New Jersey, whose reasonable tax laws have attracted the organizers of most of the great combinations, are holding them to rigid account. The present enforcement of corporation law is a situation of which good citizens may well be proud. The work is necessarily slow, but it is being generally well done and, between the courts and the investors in securities, unsound corporations are getting their come-up-ance.

But, of the 164 trade union outrages committed in the month of June, and listed in these columns, few indeed have been brought to the attention of the courts. Of the 290 crimes of like origin recorded from October to last May a small proportion are being prosecuted, and without exception, so far as we know, the union organizations are defending those charged with crime. It is this flagrant lawlessness which needs attention, for it is a violent and criminal denial of the right to life, liberty and the pursuit of happiness. This right is denied to the great body—the majority—of workingmen who do not belong to trade unions; and it would be well for our correspondent, and for that very large class of citizens who, like him, are right-minded but apt to digress from the main issue, to help in solidifying public opinion for the enforcement of law where it is being most flagrantly violated. Stoppage of work hurts the workmen some and the whole community a great deal, and it is the object of this writing to help thinking people to avoid befogging the issue.

The Interstate Commerce Commission has issued a notice showing that the Pennsylvania, the Erie, and a number of other roads in addition to those heretofore announced, have applied for an extension of the time for compliance with the amendment to the Safety Appliance Law; and all of the applicants will be heard together in Washington on August 5. The application of the Erie road specifies the length of time (six months) which it desires to have allowed. The application states that when business is as heavy as at present the company cannot withdraw cars from service to be fitted with new safety appliances without injustice to the public. This being so, Congress, it is claimed, has not allowed enough time for the road to fully equip its freight cars with power brakes; and to have 50 per cent. of every train braked is declared to be, under the present conditions, a hardship, because it necessitates delays to switch the air-braked cars to the front of the train. The Denver & Rio Grande road asks for more time within which to equip its narrow gage locomotives with power driving-wheel brakes.

Government Accident Bulletin No. 7.*

The Interstate Commerce Commission has issued its seventh quarterly accident report, being for the three months ending March 31 last. Following is the substance of the report, except tables 3 and 4 (details of coupling accidents, etc.).

The number of persons killed in train accidents was 300, and of injured 2,834. Accidents of other kinds bring the total number of casualties up to 827 killed, and 11,481 injured. The report deals only with (*a*) passengers and (*b*) employees on duty.

TABLE NO. 1.—SUMMARY OF CASUALTIES TO PERSONS.

	Passengers.		Employees.	
	Kil'd.	Inj'd.	Kil'd.	Inj'd.
Collisions	46	753	165	1,029
Derailments	6	325	69	457
Miscellaneous train accidents (excluding the above), including locomotive boiler explosions	..	13	14	257
Total (train accidents)	52	1,091	248	1,743
Coupling or uncoupling cars	..	...	76	735
While doing other work about trains, or while attending switches	..	...	35	1,534
Coming in contact with overhead bridges, structures at side of track, etc.	1	1	25	258
Falling from cars or engines, or while getting on or off	33	297	155	2,123
Other causes	8	220	294	3,479
Total (not train accidents)	42	518	585	8,129
Total, all classes	94	1,609	833	9,872

The increase in numbers in all of the principal items of the record, which accompanies the enormous increase in railroad traffic throughout nearly all parts of the country, and which characterized the last Bulletin, appears again in this one. Of the accidents shown in Class A† three were particularly disastrous: Items 5, 15 and 34 (numbers 9, 1 and 16). In these three collisions 43 persons were killed and 129 injured. Item 5 (12 employees killed) represents a cause which is very common, but the case has two obvious peculiarities which should be mentioned. First, the large company of laborers was carried in what is perhaps the most dangerous part of the train, instead of in a car at the rear end of the train, as is quite generally customary. Second, the use of flags, torpedoes, and fusees was depended upon to protect a train from rear collision at a time when, in consequence of the presence of deep snow on the ground, the use of the block system was demanded by considerations of more than ordinary gravity. Deep snow makes difficult walking for the flagman, and often interferes with the effectiveness of torpedoes; and if snow is blown about by the wind or disturbed by the moving train the engineman may have his view of the flagman's flag or lantern obstructed.

Item 15 represents one of the most remarkable collisions that has ever occurred in this country. The visual signals (automatic semaphore block signals), with which the road is equipped for the prevention of collisions, were in this case concededly adequate and in good working order, but the engineman appears to have been oblivious to all signals for a period of two, three, or more minutes; and as the train was running very fast, this length of time sufficed for him to pass three or four warning red lights, and therefore to collide with the passenger train in advance, causing a terrible wreck. The engineman was fatally injured, dying within a few hours; so that there is no explanation of his lamentable neglect, except an unconfirmed newspaper statement that before he died he said that his attention had been drawn away from the signals by some trouble with an injector. To attend to an injector, or to anything, to the neglect of the signals is, of course, under such circumstances, the grossest negligence. The condition of the engine after the collision tends to indicate that the engineman neither shut off steam nor applied the brakes. This man appears to have been in good mental and physical health, so far as could be known. He had had ample experience, and his record is reported as good. The fireman is not held by the superintendent to be chargeable with any responsibility in the case; his duty, it is said, was at his fire.

Item 34 represents a notable disaster, in which the horrors of a butting collision between two passenger trains in the dead of night, both trains moving at high speed, were intensified by fire. The pecuniary loss is greater than it would have been but for the fire. The report of this collision gives a statement of the cause, from which the following paragraph is made up:

Two passenger trains, bound east and west, respectively, collided near C. From A east the stations are as follows: A, B, C, D, etc. The eastbound train was given orders at A to meet the westbound train at C. This order for the westbound train was placed at D (being No. 6), together with another order (No. 7) concerning a freight train to be passed at B. The operator at D, hearing the westbound train approaching, and knowing what conductor was in charge of it, transmitted to the despatcher this conductor's signature to both these orders, and obtained his approval ("complete") of said orders before the train had stopped at his station. After doing this he claims to have placed both orders—one on top of the other—on his counter, where the conductor could sign and take them. He then went out to the train to despatch and receive the United States mail. This action was in violation of the regulations, which require an operator to obtain the signature of the conductor to an order before transmitting the signature to the train despatcher to secure the despatcher's "complete." The delivery of the order is required to be made by the operator in person, to whom the conductor must read the order for comparison with the copy retained by the operator. Immediately on stopping at D, the conductor of the westbound train went to the office, signed and took one of the orders (No. 7) —that in regard to passing the freight train—but claims to have seen nothing of the other order (No. 6). He left the office before the operator returned, delivered to the engineman a copy of the order which he had taken, and the train was immediately started. The rule not only requires that the conductor read his order aloud to the operator for comparison, but also prohibits conductors from tearing off orders in the absence of the operator.

The operator, as stated in the report, was new to his place, but he is said to have had a good record in his previous position. His misconduct appears to have been of a kind, however, which experience alone affords no security against. The same may be said of the act of the conductor. This man was the oldest conductor on that division of the railroad.

Of the total in Table No. 2, 291 collisions and 125 derailments affected passenger trains. The damage to cars, engines, and roadway by these accidents amounted to $2,491,046, namely: January, $894,639; February, $723,614; March, $872,793. Given more in detail, these facts appear as below:

TABLE NO. 2.—COLLISIONS AND DERAILMENTS.

	No.	Loss.	—Persons.— Kil'd.	Inj'd.
Collisions—				
Rear	550	$544,197	111	635
Butting	262	539,374	56	647
Trains separating	716	315,274	34	286
Miscellaneous	122	87,668	10	214
Total	1,650	$1,486,513	211	1,782
Derailments due to—				
Defects of roadway, etc.	245	$200,734	20	304
Defects of equipment	449	335,221	4	85
Negligence of trainmen, signalmen, etc.	80	62,976	5	95
Unforeseen obstruction, etc.	69	74,329	20	78
Malicious obstruction of track, etc.	322	54,043	9	44
Other causes	322	277,230	17	176
Total	1,181	$1,004,533	75	782
T'l collisions & derailments	2,831	$2,491,046	286	2,564

In the [double column] table of "Class A" accidents the number of items, 34, is the same as in the table for the quarter last preceding, but the losses, both of life and of property, are larger. Besides the three notable cases already mentioned, a number of others show details which are of particular interest. In Items 1, 4, 8, 12, 13, and 29, misconduct or negligence is chargeable to men lacking in experience; in Items 1 and 6, the man or men at fault had been on duty an excessive number of hours, and in Items 10, 11, 19, 20, 22, 24, 28, 29, and 30, collisions are reported in consequence of errors

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*The *Railroad Gazette* record of train accidents for the months covered by this bulletin will be found on pages 149 and 153; 251; 299 and 300 of this year. Below is a list of the principal accidents in these three months, as shown in our record. To the items in this list we have appended the number of the corresponding item in the list of causes in the Government Bulletin, so far as we are able to identify the accidents.

Prominent Accidents in Railroad Gazette Records.

Jan. 7.	Cochran, Pa.	2
8.	Ada, Ohio	16
16.	Cumberland, Md.	8
20.	Chiwaukum, Wash.	5
27.	Westfield, N. J.	15
28.	Esmond, Ariz.	34
Feb. 23.	Berea, Ohio	33
Mar. 9.	Olean, N. Y.	..
Mar. 31.	Waterbury, Conn.	..

The Government Bulletins for preceding quarters have been published in the *Railroad Gazette* as follows:

Bulletin No. 6, page 325, 1903.
Bulletin No. 5, page 67, 1903.
Bulletin No. 4, page 833, 1902.
Bulletin No. 3, page 607, 1902.
Bulletin No. 2, page 508, 1902.
Bulletin No. 1, page 309, 1902.

†The accidents included in "Class A" are (1) all cases in which the damage is reported at $10,000 or over; (2) notable cases in which passengers are killed, and (3) cases doing damage less than $10,000, and down to $2,000, wherever the circumstances or the cause may be of particular interest.

PROMINENT TRAIN ACCIDENTS (CLASS A).

[NOTE.—R. stands for rear collision; B., butting collision; M., miscellaneous collisions; D., derailment; P., passenger train; F., freight and miscellaneous trains.]

Item.	Record No.	Class.	Kind of train.	Killed.	Injured.	Damage to engines, cars and roadway.	Cause.
1	56	R.	F. and F....	1	..	$285	The foremost train had been stopped because of a hot journal; was not protected by flag; this train had started from the last preceding station without the conductor and without the rear brakeman; engineman who ran without conductor has 8 months' experience, flagman 7 months; all on duty 19 hrs. 10 min.
2	7	R.	P. and F....	7	7	1,700	A passenger train ran into a freight; personal injuries aggravated by fire in stoves in cars. A brakeman neglected to flag passenger train; had been a train brakeman 16 months.
3	2	R.	P. and P....	..	2	2,000	Occurred at 4 a. m.; dense fog; train of 9 cars traveling at about 35 or 40 miles an hour was run into, at the rear, by train of 5 cars running 50 miles an hour; time interval at telegraph station, 6 miles back, was 7 min.; flagman did not drop off fusees; despatcher of 6 months' experience did not notify second train that it was near to the first.
4	40	R.	F. and F....	2	2	2,000	On steep descending grade; train eluded control; engineman at fault was killed; his experience, 4 months; conductor's, 2 years; three brakemen's, 16 months, 15 months, and 9 months, respectively.
5	9	R.	F. and F....	12	14	2,500	Foremost train was pushing a rotary snow plow; men killed were shovelers riding in freight car behind engine of second train. Snowplow train did not signal by torpedoes or fusees, and had not given suitable notice to following train.
6	39	R.	F. and F....	..	..	2,500	Brakeman failed to flag; had been on duty 23 hrs. 35 min.
7	10	R.	F. and F....	2	..	2,800	Occurred 3 a. m.; engineman at fault (who was killed) appears to have been asleep; the fireman also was killed.
8	4	R.	P. and F....	4	3	3,095	Occurred 4 a. m.; passenger train ran into two locomotives coupled together; clear block signal wrongfully given. Signalman's attention being momentarily withdrawn from his signal levers, a messenger boy, without authority, cleared the signal. Signalman's age, 19 years 10 months.
9	33	D.	F.....	2	2	4,000	Train ran away (3 miles) on 2.5 per cent. grade; excessive braking caused whole train of 17 cars to slip; only 6 cars air-braked.
10	61	B.	P. and F....	..	2	4,550	A freight train was placed on a side track and kept there 9 hrs. 15 min. to give opportunity to crew to rest. At the end of this period they started out, after passenger train No. 1 had passed, "thinking" No. 5 also had passed, and collided with No. 5. Conductor and engineman did not confer directly, but through a brakeman, and a misunderstanding arose as to identity of the respective passenger trains.
11	38	R.	F. and F....	2	15	5,500	Occurred 2 a. m.; dense fog; by special order the prescribed time interval had been lengthened from 5 min. to 15 min., but in a distance of 9 miles a freight traveling 20 to 40 miles an hour overtook another freight traveling about 10 miles an hour.
12	44	B	F. and F....	..	2	5,600	Northbound train ran past the meeting point; conductor is reported as having only one year's experience in train work and only 7 months' as conductor. Engineman's experience, as such, reported as 8 days.
13	17	M.	P. and F....	..	4	5,700	Freight train was on main track, unprotected, when passenger was due; experience of conductor, 3½ months; of engineman, 3 months.
14	12	R.	F. and F....	1	1	6,163	Permissive block signaling; empty engine ran into derrick car standing at water station; engineman of empty engine looked beyond standing train and saw and acted on the clear signal for the next block section.
15	1	R.	P. and P....	23	85	7,000	Collision on long tangent; night; engineman, running very fast, disregarded distant and home block signals, also three red lanterns at different points. This engineman was killed. His eyesight was perfect one year before the accident. The road has no periodical examination or test of enginemen.
16	3	R.	P. and P....	3	14	7,400	Collision occurred 667 ft. beyond block signal; engineman approached this signal too fast and failed to see it soon enough, the arm being obscured by snow and steam; rails were frosty.
17	29	D.	F.....	..	..	8,350	Broken flange; indication of an old defect; speed 20 to 30 miles an hour; rated capacity of car 70,000 lbs.; contained 77,800 lbs.
18	24	M.	F.....	..	..	8,682	Train broke in two; rear portion ran into the forward portion; 74 cars in train; 23 cars air-braked.
19	5	R.	F. and P....	..	3	9,200	Light engine ran into rear of passenger train standing at station; sleeping car destroyed; had been running too fast, shortening time interval from 10 min. to 7 min.; approached station not under control; engineman suspended 30 days.
20	47	B.	P. and F....	2	2	9,510	Occurred 7 p. m.; men on passenger train failed to identify freight train standing on side track; engineman and fireman of passenger train killed; conductor, baggageman, and brakeman saw on side track engine No. 168, but say that they thought it was 169.
21	27	D.	P.....	..	..	10,000	Supposed loose guard rail.
22	22	B.	P. and F....	5	..	10,400	Engineman of empty engine overlooked passenger train on time-table; this man was killed.
23	70	D.	F.....	..	..	10,450	Broken flange.
24	15	B.	P. and P....	1	1	11,718	Conductor and engineman of westbound train "overlooked" eastbound. Both men of experience with fair records.
25	46	D.	F.....	..	..	14,000	Broken arch bar in truck.
26	67	D.	P.....	..	15	14,100	Defective switch rod; damage mostly from fire.
27	31	D.	P.....	2	1	14,500	Washout; drift jam in river; watchman passed along the road 3 hrs. before accident.
28	76	B.	P. and F....	2	19	15,000	Engineman of empty engine disregarded telegraphic order; this man was killed.
29	19	B.	F. and F....	..	2	16,496	Conductor and engineman eastbound overlooked telegraphic order; conductor's experience, 2 months, but with good record as brakeman.
30	18	B.	P. and F....	2	21	17,000	Conductor and engineman of freight overlooked passenger train; engineman was killed.
31	32	D.	P.....	..	6	19,100	Occurred at 1 a. m.; switch maliciously misplaced; lamp fixed so as to indicate all right.
32	53	R.	P. and P....	3	13	33,892	Engineman failed to observe signals and to control speed.
33	41	B.	P. and F....	4	9	37,900	Night; westbound passenger train ran 6 miles on eastbound track; signalman at west end of this section had permitted freight to start eastward; appears to have given this clear signal when he set up the route through cross-over for expected passenger train. Signalman's age, 25 years; experience, 2 years.
34	16	B.	P. and P....	8	30	79,450	Occurred 3 a. m.; operator failed to deliver a telegraphic order; operator's experience at this place, 2 months; elsewhere, 5 years; conductor (with good record) also disregarded rule.
			Total.....	88	275	$402,541	

which in all probability could not have occurred had the block system been in use.

One of the most complicated difficulties found in running trains without the block system is illustrated in the case of the collision shown in Item 3. The report of this collision says, concerning the cause:

Train No. 3, southbound, ran into the rear of train No. 203, southbound, badly damaging the engine of No. 3 and a business car on rear of train No. 203. Accident was caused by improper flagging and lack of precaution on part of the train despatcher. Both trains were moving at the time of the collision, No. 203 running at a speed estimated at 35 to 40 miles an hour, and No. 3 at 50 miles an hour. No. 203, with nine cars, was delayed and fell back on the time of train No. 3. The latter train had five cars. Both trains are of the same class, and rules permit a delayed train, when falling back on the time of a train of the same class, to proceed on its own schedule until overtaken. No. 203 left the initial point on the district 22 minutes in advance of No. 3, but on account of having a heavier train and some trouble with a hot driving box on the engine, and being delayed by a freight train, No. 3 gradually gained on it. The trains passed the last open telegraph office north of the point of collision, seven minutes apart. There was a dense fog prevailing at the time and the conductor and flagman of No. 203 failed to use the necessary precaution; they neglected to drop off a fusee; neither did the despatcher on duty notify the conductor and engineman of No. 3 that they were closing up on the train ahead.

TECHNICAL.

Manufacturing and Business.

The Lehigh Iron & Steel Co. has been incorporated in New Jersey, with a capital stock of $250,000, to make iron and steel; also to build railroads, etc.

The Southern Foundry & Machine Company's shops at Knoxville, Tenn., were destroyed on the morning of July 24 by fire which started in the working room. The total loss was $60,000.

Mr. Edward C. Schmidt, formerly Assistant Professor of Railway Engineering at the University of Illinois, is now connected with the American Hoist & Derrick Co., St. Paul, Minn., as Assistant Engineer.

The Westinghouse Traction Brake Co. reports recent sales of 174 street car air-brake equipments with motor driven compressors. The Los Angeles Ry., with an order of 80, heads the list of 10 purchasers.

A. G. Elvin, hitherto Master Mechanic on the Delaware, Lackawanna & Western, has resigned to go to the Coffin-Megeath Supply Company as Manager of its Mechanical Department. Mr. Elvin will be located at Franklin, Pa.

Mr. E. H. Symington, formerly with the T. H. Symington Company, of Baltimore, has become Manager of the Symington Journal Box and Dust Guard for the Railway Appliances Company, Chicago and New York. The Railway Appliances Company is the Agent for the Chicago territory.

The Walter A. Zelnicker Supply Co., of St. Louis, issues a daily. It is a bulletin of rolling stock and permanent way materials and machinery on hand and ready for delivery. It is an enterprising undertaking and makes interesting reading. It should be of real value to many railroad officers.

An officer of the Astoria Steel Company tells us his company expects to begin to make steel castings about October 1. The works at Astoria, N. Y., are being equipped with modern apparatus and will have a capacity of 100 tons a day. P. J. Ryan, formerly of the Penn Steel Castings Company, is sales manager.

The Colorado Fuel & Iron Co. announces the promotion of J. J. Welborn to be Acting General Manager, and of C. F. Parker to be Acting General Sales Agent. Mr. Welborn has been General Sales Agent of the company. Mr. Parker is the company's Traffic Manager and will continue to discharge the duties of that position.

The Stanyon Engineering Company, Empire Building, Pittsburg, Pa., Thomas W. Fitch, Jr., in charge, has been appointed General Sales Agent for the Columbia Bridge Company of that city. The company's works, located at Carnegie, are fully equipped for making iron and steel for bridges, buildings and general structural work.

Mr. F. M. Bisbee, formerly Superintendent of Track, Bridges and Buildings, of the Gulf, Colorado & Santa Fe, in Texas, and more recently Chief Engineer of the St. Louis & San Francisco, and of the Tennessee Central, is now Engineer for B. Langtry & Sons, railroad contractors, of Fort Madison, Iowa. Mr. Bisbee has charge of all the firm's work east of Kansas City.

Contracts have been signed for the preliminary work on several buildings of a new steel plant to be built at New Castle, Del. It is understood that the head of the concern is Frederick Baldt, General Manager of the Penn Steel Casting Company, of Chester. The title of the concern will be the Baldt Steel Company, and it will control process of steel making discovered by Mr. Baldt.

The National Mining Co., Pittsburg, Pa., has recently added to its electrical equipment one 13-ton Baldwin-Westinghouse locomotive; two 200-kilowatt, 500-volt, 200 r.p.m., engine-type generators, connected to Buckeye engine; one 20-kilowatt, 125-volt, 390 r.p.m., engine-type generator connected to standard engine, and the usual switchboard and detail arrangements. All this apparatus was furnished by the Westinghouse Companies.

The Toledo Foundry & Machine Co. will built a large foundry building and machine shop at Toledo to make dredges, pile drivers, and excavators. The new buildings will cost about $60,000. The land recently bought has an aggregate frontage of 182 ft. on Cherry street, 148 ft. on Water street, and 180 ft. on Vine street. The work will be done by the company's forces. The officers are: President, H. W. Koekler; General Manager and Treasurer, J. C. Wuerfel; Secretary, C. E. Wuerfel.

Iron and Steel.

The first open-hearth furnace has been put in operation at the plant of the Damascus Nickel Steel Company, at East Carnegie, near Pittsburg. The furnace has a capacity of 30 tons a day.

It is reported that the Sweet Steel Company of Syracuse, N. Y., will move to Williamsport, Pa., where new shops will be built at once. The bonds have been underwritten for $150,000.

The National Steel Foundry has been organized in New Haven, Conn., to engage in general steel business. A large tract of land has been bought near the National Wire mills, and about $400,000 of the capital has been paid in. Henry L. Hotchkiss is President; H. Stuart Hotchkiss, Treasurer; Eugene Buckman, Secretary, and Maribau Simms, General Manager.

Kilby Locomotive and Machine Works.

The buildings of the new car foundry of the Kilby Locomotive & Machine Works of Anniston, Ala., have been completed and modern equipment put in. The wood working department is being enlarged and machinery set up for building standard freight cars. The company has for some time been making logging, cane and tram cars.

Ramapo Iron Works.

The MacPherson Switch & Frog Co. has been consolidated with the Ramapo Iron Works, and the new organization will bear the name of the latter company. To the present plant at Niagara Falls, consisting of a building 80 x 185 ft., will be added a building 75 ft. by 270 ft.; a building 65 ft. by 270 ft.; a building 45 ft. by 320 ft.; office, 38 ft. by 40 ft.; boiler room, wash rooms and all accessories. The plant will be well equipped and will have electric cranes for handling all work and electric motors for driving machinery, purchasing power from the Niagara Falls Power Co. The buildings will be built of what is known as mill construction, having brick walls and heavy timbers for roof.

A New Car Shop in Worcester.

The T. H. Buckley Car Manufacturing Company has been organized in Worcester, Mass., with a capital of $250,000, to build steam and electric cars, snow plows, etc. The officers are Thomas H. Buckley, President and Treasurer, and John T. Flanagan, Secretary; Mark N. Skerrett is also interested. Land has been bought adjoining the present works of the T. H. Buckley Lunch Wagon Manufacturing & Catering Co., where connection can be made with the Boston & Albany railroad. The contracts have all been let for the new buildings, the smallest of which will be 35 ft. x 135 ft. The main car shop will be 66 ft. x

225 ft. Its capacity will be 200 cars a year. The total cost of the new buildings will be about $42,500, and the shops will give employment to about 300 men.

Extension of the B. & O. Mount Clare Shops.

A 300 ft. addition, 130 ft. wide, is being built to the machine and erecting shop of the Baltimore & Ohio at Mount Clare. The addition will be used for a boiler shop and will be served by two cranes, one to be on an extension of the erecting shop runway, making it possible to pick up a boiler in the erecting shop and place it in the boiler shop without transfer. A 10-ton, single-trolley crane, 54 ft. span, 27 ft. high, and having 300 ft. travel, will serve the machine section of the new shop.

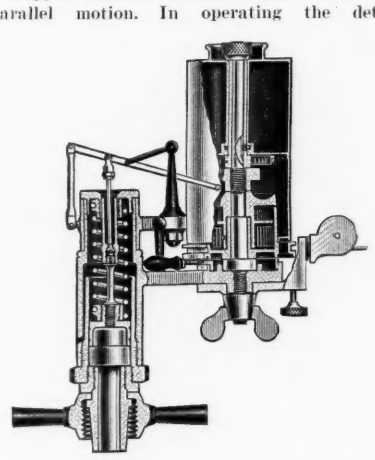
Machinery for this latter will include a 1,000-ton hydraulic flanging press, a 67-in. throat punch, a 54-in. throat combined punch and shear, and two pairs of boiler plate rolls. Also a 17-ft. gap hydraulic riveter, with capacity ranging from 50 to 150 tons, varying by 25-ton increments. It will be served by an electric crane 31 ft. 6 in. span, and 52 ft. above the rail. The shop will have a system of B. & O. standard 21-in. gage track for handling material. The cost will be about $200,000, and it is expected to be finished by Dec. 1, 1903.

Oil House Practice.

Recent practice in oil house designs on many roads employs compressed air together with a complicated system of pipes and valves. The air system appears to have many advantages, but unfortunately there are two serious disadvantages, which, singly or jointly, have caused some roads to abandon it. One of these is the introduction by the air of water into the oil, which, settling to the bottom, gives an undesirable mixture at the faucet. A suggested remedy for this is the use of a small auxiliary tank, into which the oil is let from the large tank by gravity or air pressure, the supply being drawn from the latter. But the roads abandoning the air scheme say that water also finds its way into the auxiliary tank. The other difficulty arises from the deleterious effect of the air on certain of the oils, especially the illuminating oils; also it affects in a less degree the lubricating oils. Oil companies disapprove of handling oils by compressed air on the general principle that the more oils are exposed to the atmosphere, the more rapidly they deteriorate.

The American Improved Detent Motion.

In taking indicator diagrams from high speed engines it it difficult to take off one card and put on another as the indicator drum must first be stopped by disconnecting from the reducing motion. The accompanying engraving shows an improved American Thompson indicator fitted with a new detent motion by means of which the drum can be stopped without disconnecting the indicator from the parallel motion. In operating the detent or



drum stop motion a small lever, shown at the bottom of the drum, is moved in the direction traveled by the drum until the drum releases itself, after which the lever is returned to its original position. When ready to take the diagram, the drum is turned forward by means of a milled rim on the top until it catches. The instrument is made by the American Steam Gage & Valve Manufacturing Company, Boston.

The Ownership of Drawings.

A novel case involving the right of one manufacturer to use the blue prints or drawings of a rival manufacturer has been decided by Judge Macfarlane, of the Court of Common Pleas, at Pittsburg. The suit is that of the Pressed Steel Car Company against officers and employees of the Standard Steel Car Company to secure the return of all blue prints and other Pressed Steel Car Company detailed drawings in the possession of the defendants. It was not found that any of the officers of the Standard Steel Car Company had themselves obtained these blue prints from the Pressed Steel Company or carried them away with them when they left the Pressed Steel Company's service. As a matter of fact, the Standard Company obtained Pressed Steel Company blue prints from several railroads to whom the Pressed Steel Company had sent them. But the court finds that these blue prints were sent to railroad companies for distinct purposes—for inspecting the cars to see that they were built in accordance with the drawings and also to enable them to order repair parts. The court sustains the plaintiff's contention that in sending out such prints in the manner shown for the purpose of business transactions between the railroad companies and the Pressed Steel Car Company, there was implied an agreement that their use should be limited to purposes naturally arising from the business relations existing between the parties, and especially that there was an implied agreement that they should not be given to a rival company for the purpose of enabling it to compete with the Pressed Steel Car Company, and that the furnishing by the railroad companies to the Standard Steel Car Company of prints obtained under such circumstances is a breach of confidence. The substance of the decision is that when the Pressed Steel Car Company permitted its customers to have blue prints it did not give them the right to a use which was not in the contemplation of both parties and which would give an unfair advantage to a competitor.

Canadian Pacific Improvements at Winnipeg.

Work on the improvements of the Canadian Pacific terminals at Winnipeg has been begun. The company has added about 350 acres to its yard room in the city to the west of the present yards, and the plans call for improvements to cost over $100,000. New roundhouses and car and locomotive shops will be built, over 35 miles of track laid, and extensive cattle yards added. The locomotive shops will be about half the size of those at Montreal, and the roundhouse will have 42 stalls. The addition to the yards is about half a mile wide by about a mile long. The new buildings to be put up will include two passenger car shops, 100 ft. x 240 ft.; a freight car shop, 100 ft. x 400 ft.; a planing mill, 100 ft. x 200 ft.; power house, 100 ft. x 100 ft.; blacksmith shop, 100 ft. x 200 ft.; locomotive shop, 162 ft. x 700 ft.; foundry and stores building, 100 ft. x 100 ft.; freight sheds, 100 ft. x 400 ft. Besides these there will be additional storehouses, oil houses and coaling sheds and bins. The junctions of the tracks of the branch lines to Souris, Toulon and Selkirk and to Winnipeg Beach will be moved further west.

THE SCRAP HEAP.

Notes.

Massachusetts papers say that the Boston & Maine is to make a slight increase in local freight rates, the same as was done by the New York, New Haven & Hartford a few weeks ago.

It is announced in Springfield, Mass., that the Railroad Young Men's Christian Association is to have a new building in that city. It will be of brick 83 ft. x 43 ft. The Boston & Albany gives the land and the New York, New Haven & Hartford and the Boston & Maine give $4,000 between them.

Even the Twentieth Century Limited has a schedule, and it is so slow that on Sunday last a New York broker who reached Chicago 14 minutes after the train for New York had started, was able to engage a special train over the Lake Shore and overtake the Limited. The special, it appears, started about half an hour behind the regular train, and overtook it at Holland, about 240 miles from Chicago.

General Manager Atterbury, of the Pennsylvania, has issued a circular to shippers and consignees saying that a serious car shortage is threatened, and calling upon all consignees to co-operate in unloading cars and returning them as rapidly as possible. The scarcity of freight cars, Mr. Atterbury says, is due in a great degree to unnecessary delays in unloading. In case of over-shipments of any class of material, says the circular, every effort will be made to control them in accordance with consignees' necessities.

Western papers say that the Atchison, Topeka & Santa Fe has served formal notice upon the Board of Trade of Kansas City that it will refuse to deliver freight cars to the Missouri Pacific, the Burlington, the Wabash and the Kansas City Southern Railroads until these roads can give some assurance that the cars will be returned promptly. The Missouri Pacific and the Burlington have announced that they will be obliged to refuse grain shipments consigned to Kansas City because of lack of terminal facilities, a result of the flood damage.

Southern Pacific Oil Tanks.

The Southern Pacific has built tanks for fuel oil at Ashland, Ore., and at Hornbrook, Edgewood, Dunsmuir and Red Bluff, Cal., of 55,000 bbl., 15,000 bbl., 15,000 bbl., 55,000 bbl., and 85,000 bbl. capacity respectively.

Disastrous Train Accident at Glasgow.

Press despatches of July 27 report a train accident at Glasgow, Scotland, killing 13 persons and injuring 20. The train was an excursion from the Isle of Man and appears to have run at uncontrollable speed into the buffer stops at the end of the track in a station. A despatch from Liverpool July 15 reports the wrecking of the "Liverpool-Southport express," killing eight persons and injuring 15.

Block System on Northern Pacific.

A press despatch from Jamestown, N. D., July 24, says that the Northern Pacific has completed the stringing of wires for the block system between that city and St. Paul. The new method of operating will be in effect after Aug. 1. On the main line between Jamestown and Fargo, 93 miles, 15 additional operators will be required. Several new stations have been built at sidings along the line and there will be day and night operators in all stations.

Freight Rates in Mexico.

A decree has been issued by the government of Mexico granting an increase in railroad rates so as to put the roads on the same basis as if their receipts were in Mexican dollars worth 50 cents. During the remainder of the present year, railroad companies are authorized to make a 15 per cent. increase with the exception of the rates on corn, wheat, cotton, firewood, charcoal, coal and articles to be exported. This action is due partly to the fact that the corporations have gold interest payments to meet, and have to buy heavily of supplies in the United States and elsewhere at gold prices. It is hoped that by January a stable value will be given to the peso, probably 50 cents gold value.

M. M. Association Scholarships.

Secretary Joseph W. Taylor, of the American Railway Master Mechanics' Association, Chicago, has sent out circulars giving information for young men desiring to take the examination for the scholarships which the Association has to confer this year. Members are advised by the circular of the conditions to which applicants must conform, and are invited to send names of applicants to the Secretary. For the one Stevens Institute scholarship which is vacant this year the entrance examinations will be held September 14 to 17, inclusive. Secretary Taylor is ready to issue a certificate admitting candidates to the examination. For the Joseph T. Ryerson & Son scholarship, to be conferred by the Association, the Executive Committee has selected the college; it is Purdue University. The fall term at Purdue begins September 9 and the examination comes September 7. For candidates living at a distance from Lafayette, examinations can be arranged elsewhere for a small fee. The recipient of the Ryerson scholarship receives $600 a year in money; this sum to be considered a debt of honor to be returned by the student, if practicable.

Civil Engineers' Committee for St. Louis.

The American Society of Civil Engineers has appointed a committee to represent the Society at the St. Louis Exposition next year; and this committee consists of Messrs. Robert Moore, Past President; E. C. Carter (C. & N. W. Ry.); Rear Admiral M. T. Endicott; James L. Frazier (T., S. L. & W. R. R.); Wm. Jackson, Emil Kuichling and J. F. Wallace (Ill. Cent. R. R.). It is the purpose of the committee to maintain headquarters in the Liberal Arts Building in the Exposition grounds, which shall serve as a rendezvous and bureau of information for visiting engineers, and also to organize and maintain a suitable exhibit of plans, photographs, models and descriptions of engineering works, particularly of works designed and executed by members of the Society. Members are asked to suggest engineering works designed or executed by members of the Society, plans and photographs of which would make creditable and interesting exhibits. The committee desires to make an exhibit which will be thoroughly representative of the best engineering practice of the day, and which will be a credit to the exhibitors and to the Society. The Secretary of the committee is H. J. Pfeifer, Laclede Building, St. Louis.

The Southern Pacific's Oil Company.

The consumption of fuel oil by the Southern Pacific Company is so extensive, its ownership of wells in California and Texas so large and its contracts with outside companies for supplies of oil so numerous that the railroad people have found it necessary to organize a separate corporation to handle that branch of their business. This is the meaning of the organization of the Kern Trading & Oil Company, with a capital stock of $1,000,000, and with Julius Kruttschnitt, J. H. Wallace, W. A. Worthington, J. L. Willcut and J. E. Foulds, all Southern Pacific men, as directors.

R. P. Schwerin, manager of purchases and supplies for the company, has heretofore handled all of the oil contracts. The new corporation will relieve him of that work. It will also assume legal title to the $3,000,000 of exploited oil lands the railroad owns in California and the oil wells the road has bought in Texas for about $2,000,000. Eventually this company will take over a great deal of land in the Southern Pacific Railroad land grant in the San Joaquin valley which it is believed will yield fuel oil. It is authoritatively denied that the new company has bought the control of the Associated Oil Companies.

The Southern Pacific people continue to change their locomotives into oil burners at the rate of two a week and reservoirs for the storage of oil are being erected at dozens of stations between Sacramento and New Orleans. About 800 of the company's engines are now burning oil. About 600 more remain to be changed into oil burners. This company is saving fully $700,000 a year in its fuel bill, oil being so much cheaper than coal.—*San Francisco Examiner.*

Press reports from Saratoga, Texas, state that the Southern Pacific has bought 800 acres of additional land in the oil fields at this place.

The Rock Island and the Texas Commission.

Having exhausted every effort and means to placate the Texas Railroad Commission, and being unable to get on a peaceable footing with that autocratic body, it is believed the Rock Island will now try conclusions with it in the courts and see whether the commission can rightfully exercise the arbitrary authority it has exercised in blocking the deal between the Rock Island and the Southern Pacific.

The first step will probably be a carrying out of the trackage agreements with the three north and south lines of the Southern Pacific in open defiance of the refusal of the commission to give its approval. These contracts have been made in connection with a bargain for the sale of a half interest in the three roads to the Rock Island. There will be a contest in the Federal Courts

with regard to the jurisdiction of the commission. The fact that the Rock Island has suspended work on the extension of the Choctaw, from Amarillo, Texas, to Tecumcari, N. Mex., 200 miles, is considered another manifestation of the displeasure of the Rock Island at the action of the commission. Indications point conclusively to the Frisco being quite as much interested in these affairs as the Rock Island. Acquisition of the Houston & Texas Central means an outlet to the Gulf for both. The Frisco has announced that beginning on Aug. 1 it will start an exceptionally fast passenger service between Houston and St. Louis in connection with the Houston & Texas Central.—*Press Despatch.*

Mr. H. H. Vreeland's European Observations.

A reporter has met in London the president of the Interurban Street Railway Company of New York, and cables these breezy replies to his questions: "Yes, I did ride on the Metropolitan in Paris. What do I think of it? Well, I am afraid if we tried to maintain a similar service in America people wouldn't stand for it at all," and Mr. Vreeland's gesture was even more emphatic than his words.

"Light passenger cars are all right," he continued, "for slow and steady traveling, but when you are making speed they are a bit uncomfortable. Coming from Paris to Boulogne on the express the other day as we did, with a forward motion of 50 miles an hour, a sideward motion of 10 and an up and down gait of 20, I tell you it kept one guessing where one was.

"I tried the Central of London—the tube—this morning," continued Mr. Vreeland, in answer to a question, "and found it excellent, all except the air. Riding a long distance to Sheepshead Bay—no, Shepherds' Bush, I mean—with everything smelling of carbolic acid, makes you keep longing continually for just one deep breath of fresh air. I took the double deck cars at Shepherds' Bush, and like them, but they would not do for New York. They might do in the suburbs. You know they have been tried in Pittsburg, New York and Boston and found impracticable things. Traffic has to move quickly with us. We can load and unload our cars in much less time. Fancy a 200 lb. woman getting up in the middle of the upper story of one of these double deckers on Broadway, to leave the car when it is running under 10 seconds' headway. Talk about tying up traffic!

"We take a passenger from South ferry to Fort George for 5 cents fare. Here, for the same distance, it would be, on a calculation of rates, about 22 cents.

"The fact is, so far as street transportation is concerned, we have accomplished what they are only talking about here."

MEETINGS AND ANNOUNCEMENTS.

(For dates of conventions and regular meetings of railroad associations and engineering societies see advertising page xvi.)

Master Car Painters.

The 34th annual convention of the Master Car and Locomotive Painters' Association will be held at Chicago, September 8, 9, 10, 11, convening at 10 a.m., Tuesday, the 8th, at the Victoria Hotel. Rooms can be secured in advance by writing to the hotel.

The list of subjects to be presented embraces: 1. Best method and material for the interior finish of modern passenger cars, including hardwood acid burning treatment, filler and stain; 2. Heating and Ventilating Paint Shops; 3. Which is Best, Touching up or Cutting In? 4. Essay, Harmony in Color in Finishing and Furnishing the Modern Railway Passenger Car, by Chris. Clark (N. Y., C. & St. L.); 5. Painting a Locomotive; 6. Painting Steel Cars; 7. Essay, Is the Authority and Responsibility of the Master Painter Co-equal, by John H. Pitard (M. & O.); 8. Essay, The Copper Sheathed Car, by J. A. Gohen (C., C., C. & St. L.); 9. Best Material for Shop Cleaning of Passenger Cars; 10. Report of Committee on Tests.

Queries.—1. Does any member advocate the use of steel wool in the paint shop? 2. Do we pay enough attention to the front ends of our locomotive engines? Can you successfully paint galvanized iron without degalvanizing? 4. What glass, if any, should be bedded? 5. Does any member still use a paint sprayer? If so, why? 6. Is there anything better than white lead for stenciling freight cars? Robert McKeon, Secretary.

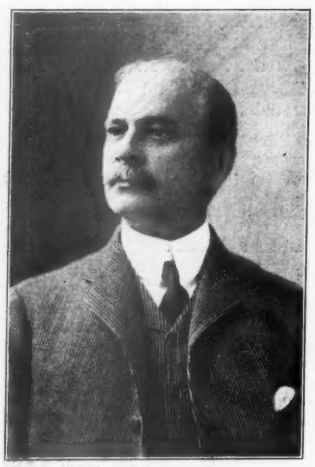
PERSONAL.

—Mr. A. B. Youngson, Assistant Grand Chief of the Brotherhood of Locomotive Engineers, becomes the head of the Brotherhood, succeeding the late Mr. Arthur.

—Mr. C. L. Bretz, who, on the first of August, resigns as General Manager of the West Virginia Central & Pittsburgh, has been in the service of that company for about 16 years. His entire railroad career covers about 39 years. He started as a telegraph operator for the Pennsylvania. Mr. Bretz expects to devote his time to private business.

—Mr. R. S. Seibert, who on the first of this month became General Manager of the East Broad Top, was born in Huntingdon County, Pa., in 1856. He began his railroad service with the Pennsylvania as a telegraph operator on the Middle Division in 1873. The next year he became Agent for the East Broad Top at Mount Union, Pa., and three years later was made Trainmaster. In 1880 he resigned to become train despatcher for the Chicago & Eastern Illinois at Chicago. In 1884 he went to the West Shore in a similar capacity, and was there promoted to be Trainmaster. For a short time, owing to ill health, Mr. Seibert was out of railroading, but returned in 1888 to become train despatcher of the Denver & Rio Grande, later becoming Superintendent of Terminals at Pueblo. In 1892 he went to Los Angeles as General Manager of the Nevada Southern.

—Mr. S. P. Hutchinson, the new General Superintendent of the Michigan Central, was born at Philadelphia, Pa., in 1861, and was educated at the University of that State. His early railroad experience was on the Pennsylvania, beginning as a rodman at Philadelphia in 1881. After going through the various grades in the engineering department he was appointed Superintendent of the Lewistown Division in 1899, and the following year was made Assistant General Agent at New York. In 1901 Mr. Hutchinson resigned from this position to become Vice-President and General Manager of the El Paso & Southwestern. From this company he went to the Baltimore & Ohio as Superintendent of the Pittsburgh Division, and on Dec. 1, 1902, he was appointed Assistant General Superintendent of the Michigan Central, from which position he is now promoted to become General Superintendent, succeeding Mr. L'Hommedieu, made General Manager.



—Mr. Frank Barr, whose promotion to the Third Vice-Presidency and General Managership of the Boston & Maine Railroad has been announced, has been in railroad service since 1869, starting as a freight clerk and telegraph operator on the Worcester & Nashua. In 1873 he was appointed Agent. In 1892 he was appointed Superintendent of the Worcester, Nashua & Portland Division of the Boston & Maine. Mr. Barr held this latter position for four years, when he was promoted to be Assistant General Manager, and he has filled that position until now.

—Mr. William F. Ellis, of Somerville, Mass., a well known civil engineer, died recently at the age of 51. Mr. Ellis was a member of the Eastern Maintenance of Way Association.

—Mr. H. D. Beach, Signal Engineer of the New York, New Haven & Hartford at Bridgeport, Conn., has resigned that position to become General Manager of the Pacific Iron Works of Bridgeport. Mr. Beach is the son of the veteran Superintendent of the Naugatuck Railroad, now a part of the New York, New Haven & Hartford, and is himself also a veteran, having been in the service of the Naugatuck and the New Haven more than 25 years. He served in the locomotive department and other departments until 1888, when he was made Signal Engineer.

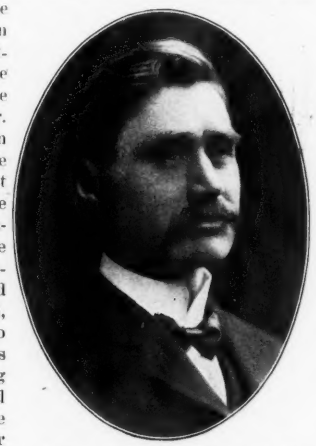
—Mr. George T. Depue, whose appointment as Master Mechanic of the Erie Railroad was recently announced, was born at Hornellsville, N. Y., in 1872. At the age of 15 Mr. Dupue began work as a messenger boy for the Erie and has been in the employ of this company ever since, with the exception of about two years, when he was with the Hornellsville Electric Company. In the Hornellsville shops he was gang foreman in the erecting shop and afterwards foreman of the machine shops and roundhouse foreman. In March, 1901, Mr. Depue was appointed Foreman of the Bradford Division shops at Bradford, and in August of that year was promoted to the position of General Foreman at Hornellsville.

—Mr. F. D. Casanave, nearly two months after his resignation as General Superintendent of Motive Power of the Baltimore & Ohio, has received from his old foremen a framed sheepskin inscribed with sentiments and signatures which he will probably rate among the best of the recognitions which his work in the world has earned for him. It is another evidence that the highest esteem and popularity with subordinates is won by rigid and considerate discipline; that the easy boss is not the best liked. A part of the inscription is as follows: "Our high appreciation of you during the time which we have been associated with you suggests this slight expression of a feeling difficult to convey in mere words. During your encumbency as General Superintendent of Motive Power in the above company your attitude towards us has been all of that character, consistent with our highest conception of courtesy and justice; that we have done our best to aid in carrying your plans to a successful issue has been due in great part to your own devotion and self-sacrifice in the company's services. We shall ever remember your work with the most pleasurable emotion, only regretting that stern necessity demands the severance of relation so highly satisfactory."

—Mr. Charles E. Lee, the new Assistant General Manager of the Boston & Maine, is 43 years old. Mr. Lee was born in Waterbury, Vt., and after a public school education entered railroad service in 1877 as a telegraph operator on the Boston, Clinton, Fitchburg & New Bedford, which is now a part of the New York, New Haven & Hartford. In 1879 he went to the Boston & Maine and after successive promotions was, in 1896, made Superintendent of the Worcester, Nashua & Portland Division at Nashua, N. H. Mr. Lee succeeds Mr. Barr, the new Third Vice-President and General Manager.

—The new General Manager of the Coal & Coke Railway, Mr. W. H. Bower, is about 48 years old. He is a native of Middleburg, Pa. He entered railroad service in 1872, and was for two years telegraph operator on the Bedford Division of the Pennsylvania Railroad. About 1880 Mr. Bower went west and worked for the Denver & Rio Grande in New Mexico; and he was in the west about a dozen years. In March, 1892, he was appointed Assistant General Manager of the West Virginia Central & Pittsburgh, and he is now promoted from that position to be General Manager. Mr. Bower's office will be at Elkins, W. Va.

—Mr. A. L. Humphrey, who has resigned as Superintendent of Motive Power of the Chicago & Alton, will, on August 1, take charge of the western interests of the Westinghouse Air-Brake Company, with office in Chicago. Mr. Humphrey has risen from the ranks. He started as machinist apprentice with the Burlington & Missouri River at the age of 14. He later became machinist and fireman on that road, going from there to the Union Pacific as machinist and gang boss at Omaha and Rawlins, Neb. He was an engineman for 10 months with the Puget Sound Coast Line, and then went to the Southern Pacific as machinist and roundhouse foreman at Sacramento and The Needles, Cal. He was next with the Atlantic & Pacific as roundhouse and division foreman, and in 1888 went to the Colorado Midland as Division Master Mechanic, becoming, in turn, Master Mechanic, 1889 to 1893, and Superintendent of Motive Power, 1893 to 1900. In the latter year he went to the Colorado & Southern as Superintendent of Motive Power, resigning from that road to take his present position with the Alton last year.



—Mr. Frederick J. Kimball, President of the Norfolk & Western, died at his home in Radnor, Pa., July 27, following an operation for appendicitis. Mr. Kimball was born in Philadelphia on March 6, 1844, and entered railroad service as a rodman on the Philadelphia & Erie Railroad Division of the Pennsylvania. After serving in the engineering department on the Pennsylvania in various capacities for about four years, he went to England and spent two years there in railroad shops. In 1878 he became interested in the construction of the Shenandoah Valley Railroad and for a short time was its President. The larger part of Mr. Kimball's railroad life has, however, been with the Norfolk & Western, of which he was elected First Vice-President in 1881. In 1883 he was elected President, and he has been at the head of the company ever since. In the receivership, beginning in 1895, Mr. Kimball was one of the receivers. At the termination of the receivership he was chosen Chairman of the Board, with Henry Fink as President; but about a year ago these two gentlemen exchanged offices.

—Mr. Joseph C. Lenix, General Baggage Agent of the Boston & Albany, died July 23. Mr. Lenix was about 46 years old and had been in the service of this company since 1882.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe.—F. T. Dolan, Division Superintendent, with headquarters at Fort Madison, Iowa, has resigned. (See Colorado & Southern.)

Boston & Maine.—W. F. Ray has been appointed Superintendent of the Concord Division, with office at Concord, N. H., succeeding Mr. Mooney, promoted. G. L. R. French has been appointed Assistant Superintendent of the Connecticut & Passumpsic Division, with headquarters at Springfield, Mass., succeeding Mr. Ray. W. M. Sanborn has been appointed Assistant Superintendent of the Eastern Division, with office at Sanbornville, N. H.

Carrabelle, Tallahassee & Georgia.—D. F. Chittenden, heretofore Trainmaster, has been appointed Superintendent, with office at Tallahassee, Fla.

Chicago & Alton.—G. W. Taylor has been appointed Superintendent of Car Service, with headquarters at Chicago.

Chicago & North Western.—J. P. Cantillon has been appointed Assistant Division Superintendent, with office at Kaukauna, Wis. O. H. McCarty has been appointed to succeed Mr. Cantillon as Assistant Division Superintendent at Winona, Minn.

Chicago, Burlington & Quincy.—Dr. J. A. Denney has been appointed Assistant Superintendent and Medical Director of the Relief Department.

Chicago, Cincinnati & Louisville.—B. H. Harris has been appointed General Freight Agent and W. B. Calloway, General Passenger Agent. Both with headquarters at Richmond, Ind.

Chicago Great Western.—C. J. Fellows has been appointed Car Service Agent, with office at St. Paul, Minn.

Cincinnati, Hamilton & Dayton.—J. E. Gould, hitherto Master Mechanic on the Queen & Crescent, has been appointed Master Mechanic of the C., H. & D., with office at Lima, Ohio.

Cincinnati, New Orleans & Texas Pacific.—See Cincinnati, Hamilton & Dayton.

Cleveland, Cincinnati, Chicago & St. Louis.—W. M. Ferguson has been appointed Advertising Agent.

Colorado & Southern.—F. T. Dolan, hitherto Division Superintendent on the Atchison, Topeka & Santa Fe, has been appointed General Superintendent of the C. & S., with headquarters at Denver, Col., succeeding F. W. Egan. (See Fort Worth & Denver City.)

Delaware, Lackawanna & Western.—R. F. Kilpatrick, hitherto Master Mechanic at Kingsland, N. J., has been appointed Master Mechanic, with headquarters at Scranton, Pa., succeeding A. G. Elvin, resigned, effective Aug. 1. Mr. Elvin has accepted a position with the Coffin Megeath Supply Company, and his office will be at Franklin, Pa.

Erie.—D. W. Bigoney, who has only just been appointed Assistant General Auditor, has again been promoted. His new position is that of Treasurer, succeeding J. W. Platten.

Evansville & Terre Haute.—B. F. Yoakum (President of the St. Louis & San Francisco) has been elected a Director and President of the E. & T. H., succeeding Edwin S. Hooley, resigned.

Fort Worth & Denver City.—F. W. Egan, hitherto General Superintendent of the Colorado & Southern, has been appointed General Manager of the F. W. & D. C., with headquarters at Fort Worth, Texas. The office of General Superintendent has been abolished.

Houston & Texas Central.—W. C. Parker has been appointed Auditor of this company and of the Houston, East & West Texas.
W. H. Field, Secretary, has resigned.

Houston East & West Texas.—E. Dargan, Treasurer, has resigned.
See Houston & Texas Central.

New York, New Haven & Hartford.—H. D. Beach, Signal Engineer, with office at Bridgeport, Conn., has resigned.

Pennsylvania Lines West of Pittsburgh.—D. F. Crawford has been appointed General Superintendent of Motive Power, with headquarters at Pittsburgh. T. W. Demarest has been appointed to succeed Mr. Crawford as Superintendent of Motive Power of the North West System, with headquarters at Ft. Wayne, Ind., and Mr. Demarest in turn is succeeded by M. Dunn as Superintendent of Motive Power of the South West System, at Columbus, Ohio. S. W. Miller has been appointed Master Mechanic of the Columbus shops, succeeding Mr. Dunn, and G. C. Bishop, hitherto Master Mechanic at Wellsville, Ohio, has been appointed Master Mechanic of the Logansport shops, succeeding Mr. Miller, effective Aug. 1.

Vicksburg, Shreveport & Pacific.—L. B. Ferguson has been appointed Master Mechanic, with headquarters at Monroe, La., succeeding A. L. Moler. Effective Aug. 1.

LOCOMOTIVE BUILDING.

The Wabash is having six locomotives built at the Baldwin Works.

The Campbell Creek Coal Co. is having a locomotive built at the Baldwin Works.

The Buffalo Creek is having a locomotive built at the Brooks Works of the American Locomotive Co.

The Terminal Railroad Association of St. Louis is having 15 locomotives built at the Manchester Works of the American Locomotive Co.

The Evansville & Terre Haute is having two locomotives built at the Pittsburg Works of the American Locomotive Co.

CAR BUILDING.

The Puritan Coal Co. is having 50 freights built at Allegheny.

The Butte, Anaconda & Pacific has ordered 12 freight cars from the Pullman Co.

The New York, Chicago & St. Louis is having 300 freights built by Haskell & Barker.

The Georgia, Southern & Florida is having 10 freights built by the Georgia Car & Mfg. Co.

The Eureka & Klamath River is having 25 freights built at the South Baltimore Car Works.

The New York Central & Hudson River has ordered 1,000 box cars from Haskell & Barker.

The Coal & Coke Co. (West Virginia) is having 120 freights built at the South Baltimore Car Works.

The Mexican Central has ordered 30 ballast cars and 20 pulque cars from the American Car & Foundry Co.

The American Lumber Co., Albuquerque, N. Mex., has ordered 100 logging cars from the Mt. Vernon Car Mfg. Co.

The Chesapeake & Ohio, in addition to recent orders, has ordered 33 coke cars, 14 hoppers and two gondolas from the American Car & Foundry Co.

The American Car & Foundry Co. has miscellaneous orders for 25 coal cars, 10 ballast cars, one plow, one combination passenger and freight and one rail car.

The Chicago, Burlington & Quincy, as reported in our issue of May 15, is building 500 box cars of 80,000 lbs. capacity at its own shops. The cars will be 40 ft. long, 8 ft. 6 in. wide and 8 ft. high, of wooden frames and underframes.

The Mississippi River & Bonne Terre, as reported in our issue of May 1, has ordered 200 "A" style side dump cars of 80,000 lbs. capacity from the American Car & Foundry Co., for July, 1903, delivery. The cars will weigh 37,000 lbs., and will be 34 ft. over end sills, and 8 ft. 6 in. over side sills, with wooden frames and underframes. The special equipment includes iron axles, American Steel Foundries Co.'s bolsters, wooden brake-beams, cast-iron brake shoes, Westinghouse brakes, Talbot couplers, American continuous type draft rigging and 33 in. cast-iron wheels.

The St. Louis Southwestern, as reported in our issue of June 19, has ordered 2,000 box cars of 60,000 lbs. capacity from the American Car & Foundry Co., for July, August and September, 1903, delivery. The cars will be 36 ft. long, 8 ft. wide and 6 ft. 10 in. high, with wooden frames and underframes. The special equipment includes M. C. B. steel axles, Simplex bolsters, Damascus brake-beams, M. C. B. Standard cast-iron brake-shoes, Westinghouse brakes, Hewitt M. C. B. Standard brasses, Tower couplers, St. Louis flush doors, Miner draft rigging, M. C. B. dust guards, McCord journal boxes and journal box lids, Winslow improved roofs, Railway Steel Spring Co.'s springs, Simplex trucks and American Car & Foundry Co.'s wheels.

The Baltimore & Ohio, as reported in our issue of July 10, is receiving bids on 40 coaches, 15 baggage cars, 15 combination baggage and passenger cars, 10 combination mail and baggage cars and two postal cars. The coaches will have a seating capacity of 68, will weigh 85,000 lbs., and measure 60 ft. long, 10 ft. ¼ in. wide over all at eaves, and 13 ft. 10½ in. high. The baggage cars will have a capacity of 40,000 lbs., will weigh 81,000 lbs., and measure 60 ft. long, 10 ft. ¼ in. wide and 13 ft. 10⅝ in. high. The combination baggage and passenger cars will have a seating capacity of 40, will weigh 81,200 lbs., and measure 60 ft. long, 10 ft. ¼ in. wide and 13 ft. 10½ in high. The combination mail and baggage cars will weigh 70,760 lbs., and measure 60 ft. long, 10 ft. ¼ in. wide and 13 ft. ⅝ in. high. The postal cars will weigh 73,030 lbs., and measure 40 ft. 8 in. long, 10 ft. wide and 13 ft. 11⅜ in. high. All cars are to be built with wooden underframes. The special equipment for all includes steel axles, cast-iron brake-shoes, automatic couplers, Tandem draft rigging, cast-iron journal boxes, steel journal box lids, B. & O. Standard paint, steel platforms, wide deck roofs and steel-tired wheels.

BRIDGE BUILDING.

ANDERSON, IND.—It is reported that the County Council has appropriated $24,000 for a steel bridge over White River at Delaware street.

ARKWRIGHT, ONT.—Bids are wanted Aug. 5, by J. M. Monkman, clerk of the township of Arran, for a steel bridge over the Sauble River.

BAY CITY, TEXAS.—It is stated that the county has voted $60,000 for improvements to roads and bridges. Address the County Clerk.

BEAVERDALE, PA.—According to reports, the County Commissioners will build a 100-ft. steel bridge over Beaver dam at this place.

BINGHAMTON, N. Y.—An appropriation of $57,000 has been made to build a bridge over the Susquehanna River at Rockbottom street, connecting Conklin with South street. We are told by S. E. Monroe, City Engineer, that bids will be asked next week.

BIRMINGHAM, ALA.—According to report, the Birmingham Railway, Light & Power Co. will replace the Howe truss on 22nd street with steel spans.

BOGUE CHITTO, MISS.—Bids are wanted Aug. 3, by R. W. McNair, Chancery Clerk, for a steel bridge 120 ft. long, to be built by Lincoln County over the Bogue Chitto River at this place.

BROWNSTONE, IND.—Bids are wanted Aug. 3, by the County Commissioners, for building 10 steel bridges, and for masonry for two bridges. Asbury H. Manuel, County Auditor.

CASTROVILLE, TEXAS.—The Board of County Commissioners, it is reported, will build a bridge across Medina River, 450 ft. long, near this place.

CHADDS FORD, PA.—It is stated that the jury appointed to report on building a county bridge across Harvey's Run at Chadds Ford, has recommended that it be built.

CUMBERLAND, MD.—See Western Maryland under "Railroad Construction."

DANVERS, MASS.—According to reports, plans are completed and the county authorized to spend $25,000 for a bridge over Waters River.

DAVENPORT, IOWA.—The Beatty-Eddy-Walsh Syndicate will want some steel bridge work at Offerman's Island in the Mississippi.

DES MOINES, IOWA.—The Council has authorized the signing of a contract with the Des Moines City Railway Co., for the building of a highway bridge at North Second street, at about $40,000, the city to pay $28,000 and the railroad company a share of the cost.

ELYRIA, OHIO.—The Council has passed an ordinance to build the bridge over the west branch of Black River at Mussey avenue, and to provide for the issue of $13,000 worth of bonds for the improvement.

FALLS CITY, NEB.—Bids are wanted Oct. 6, by J. A. Tanner, County Clerk, for some bridge work.

FORT DODGE, IOWA.—Reports state that the Chicago Great Western will replace the present wooden bridge with a steel structure between this place and Lehigh.

GREENSBURG, PA.—The Westmoreland County Commissioners estimate that it will cost $100,000 to replace wrecked bridges in the county.

HENRYTON, MD.—Plans are being made for a steel bridge over the Patapsco River for Carroll and Howard Counties. Address Howard County Clerk, Elliott City, Md.

HERMANN, MO.—Bids are wanted Aug. 3 by the County Court for a steel bridge over Richland Creek, Gasconade County. J. C. Danuser, Bridge Commissioner.

INDIANAPOLIS, IND.—The County Council has appropriated $16,000 to build bridges to replace those recently washed away by the floods.

JOHNSTOWN, PA.—Bids will soon be asked by the County Commissioners for an iron bridge over the Rays-town branch of the Narrows.

KANSAS CITY, MO.—According to reports, an agreement has been reached between the Metropolitan Street Ry. and the County Commissioners, to build the Central avenue and Twelfth street bridges jointly; the railroad company to build the James street bridge, and the county to build Kansas avenue bridge.
It is also stated that plans for a bridge at Charlotte street have been approved. It is to be the width of the street and 64 ft. long; and is to be built by the Metropolitan Street Ry.

LOWER MERION, PA.—A $5,000 bridge may be built at this place, by Montgomery County.
The county is also considering building a steel bridge at Durland.

MILWAUKEE, WIS.—Reports state that the Council will appropriate $75,000 for building a viaduct at 27th street.
The Tenth street bridge in South Milwaukee may be strengthened to carry street cars. The Council is considering the matter.

MISHAWAKA, IND.—The County Commissioners awarded the contract for a Melan arch three-span bridge, 375 ft. total length, to be built at Cedar street over the St. Joseph River, to H. E. Talbot & Company, of Toledo, Ohio, at $61,763. Bids were as follows: Melan arch bridge, complete—Peter Suzio, $56,000; R. I. Blome & Co., $61,836; Jas. O. Heyworth, Chicago, in his own plans, $56,000, without embankment; Savage Construction Company, $65,030.

NEW YORK, N. Y.—The Board of Estimate and Apportionment has directed that plans be prepared by the engineer for the new Madison avenue bridge at 138th street, over the Harlem River. It is proposed to have a wider approach and easier grade at the south end.

The Board of Estimate and Apportionment appropriated $325,000 to build a bridge over Flushing creek to connect Flushing with Long Island City, and $250,000 to build approaches and abutments at Fordham Heights. The bridge at King's Bridge will be placed here and a new one built for that place.

PITTSFIELD, MASS.—It is reported that City Engineer Forbes is preparing plans to abolish the Millville grade crossing by building a bridge.

RIVERSIDE, CAL.—It is estimated by County Engineer Pearson that the cost of repairing West Riverside bridge will be $13,000.

SANDY CREEK, N. Y.—According to reports, plans have been made for a concrete-steel bridge over Sandy Creek at this place.

SANTA ROSA, CAL.—Bids are wanted Aug. 6, by F. L. Wright, Clerk of Sonoma County, for a stone bridge at Champlins.

SAVANNAH, MO.—Bids are wanted Aug. 6, by J. E. Schnitzius, Bridge Commissioner for Andrew County, for about 20 bridges.

SHUSHAN, N. Y.—It is stated that the Jackson and Salem town boards will build four iron bridges in place of wooden structures, over Battenkill south of this place.

STEUBENVILLE, OHIO.—The plans have been altered and approved by the War Department so that the company can begin to build the Market street bridge over the Ohio River.

TAMPICO, MEXICO.—A steel viaduct is to be built between the city and the wharf. The Government has appropriated about $95,000 for it.

TRENTON, N. J.—Bids will be wanted in a week or so by the Mercer County Board of Freeholders for some bridge work.

WARRENSBURG, MO.—Contracts may be asked Oct. 1 for bridges. Address the County Clerk.

WASHINGTON, D. C.—Bids opened July 25 by Col. Allen, Corps of Engineers, U. S. Army, for the proposed highway bridge over the Potomac River to be located 1,250 ft. above the present Long bridge and for which $895,000 is available, were: Pennsylvania Steel Company, of Philadelphia, $914,200, including a sheet asphalt pavement, or $879,200 with a temporary wooden pavement; McMullen & McDermott, of New York, $937,000 with asphalt or $892,000 with wooden pavement; the Scherzer Rolling Lift Bridge Company, of Chicago, $894,000 with wooden pavement. With the temporary wooden pavement, all the bids are within the limit of cost; with the asphalt pavement all are in excess of it. Work must begin within 30 days from the date of notice of approval of contract, and the bridge must be completed by Feb. 1, 1905.

WEST PALMYRA, N. J.—Plans are being made for a bridge, with stone abutments, at this place for the Camden & Suburban Ry. Co.

WINDSOR LOCKS, CONN.—It is reported that plans have been made for enlargement of the railroad bridge across the Connecticut between this place and Warehouse Point.

YAZOO CITY, MISS.—Bids are wanted Aug. 3 for building three bridges and repairing a stone bridge. Address S. S. Griffin, Clerk of the Board of Supervisors.

Other Structures.

ANNAPOLIS, MD.—Bids for the construction of a sea wall and a chapel in connection with the rebuilding of the Naval Academy, were opened at the Navy Department, at Washington, on July 23. Lattay & Terry, of Baltimore, bid $141,000 for the construction of the sea wall. For the chapel Andrew & Thomas, of Baltimore, bid $364,900, and the Noel Construction, of Baltimore, $394,700, the lowest bid being $100 less than the $365,000 allotted for the work.

ATLANTA, GA.—It is said that the Atlanta Terminal Co. is now ready to go on with the building of its union passenger station, the company's petition to change the grades of various streets approaching the proposed station having been granted.

BRIDGEPORT, CONN.—Plans are reported completed for the new passenger station for the New York, New Haven & Hartford in Bridgeport.

BROOKLYN, N. Y.—Local reports state that the Long Island has bought land for its large freight house at the Atlantic avenue terminal.

DURANGO, MEXICO.—Reports state that the board of directors of the Fundicion de Metals Co. has decided not to remove its extensive iron smelting and steel plant from this place to Tarreon. However, the present capacity of the plant may be increased.

MEMPHIS, TENN.—Nothing definite has been decided regarding the projected freight station at this place for the Nashville, Chattanooga & St. Louis.

MISSOULA, MONT.—The Northern Pacific is preparing to build a roundhouse also a freight house at Trout Creek, 125 miles west of Missoula.

NEW YORK, N. Y.—The Central Railroad of New Jersey's improvements along the Hudson River at the foot of Liberty street, New York City, are expected to cost about $1,000,000. In connection with the city, the company will build two new piers 750 ft. long. The bulkhead buildings will be three stories high, connecting the freight piers and ferry house with a promenade on top for public use. West street on the river front will be widened from 70 ft. to 250 ft., and a foot bridge put over it for passengers.

PHILADELPHIA, PA.—According to reports the Philadelphia & Reading R. R. will build, at the foot of Noble street, Philadelphia, a double deck pier 150 ft. wide by about 585 ft. long, with tracks on each floor.

SANTA ROSA, CAL.—Plans are being made for a stone passenger station here. Work has been started on the new freight house for the California North Western.

SAYRE, PA.—Bids are wanted for three large one-story buildings for the Lehigh Valley here. Two of the buildings will be 360 ft. x 102 ft. each, and one 366 ft. x 748 ft.

TOLEDO, OHIO.—It is reported that the Lake Shore & Michigan Southern will build a new passenger station at this place.

WATERLOO, IOWA.—An officer of the Chicago Great Western tells us plans are being made for the building of a freight house at Waterloo.

RAILROAD CONSTRUCTION.

New Incorporations, Surveys, Etc.

ARIZONA, NEW MEXICO & COLORADO.—This company has been incorporated in Arizona, to build from a point on the Southern Pacific, in Cochise County, to Durango, Colo., a distance of 350 miles. James A. Antrey, of Colorado; Charles Thomas, of Arizona, and others are incorporators.

ATLANTA, KNOXVILLE & NORTHERN.—Press reports state that Edington, Groner & Griffiths, Knoxville, Tenn., have received the contract for building a branch of this road from Knoxville up the Tennessee River to Ross. Surveys are reported finished.

BALTIMORE & OHIO.—The contracts for the work that is to be done by this company in connection with the terminal improvement at Washington, D. C., have been let to McMullen & McDermott and the Hoffman Engineering & Constructing Co., of Philadelphia, the total cost to be over $2,000,000. The work to be done by the Baltimore & Ohio consists mainly of the new railroad, from Montello, about four miles from Washington, on the Baltimore-Washington line, to the new terminal station at Massachusetts avenue, Washington. This includes a large stone viaduct. On the viaduct, from New York avenue to the terminal station, there will be 10 tracks. The contract which has now been let, and which will require two years for its completion, includes not only the roadbed and bridges, but the freight terminal buildings and yard, the roundhouses and the other necessary fixtures. That part of the Washington improvement south of the new terminal station, including the Capital Hill tunnel, is to be built by the Pennsylvania Railroad, and the station itself is to be built under the direction of architect D. H. Burnham.

BELLINGHAM BAY & BRITISH COLUMBIA.—It is stated that an officer of this company has ordered an extension built from Maple Falls, Wash., eastward through Okanoga County to Spokane. Surveys have been completed and work will shortly be begun. Amended articles of incorporation increasing the capital stock have been prepared in San Francisco, and will shortly be filed. (April 24, p. 304.)

BROOKVILLE & MAHONING.—A charter has been granted this company to build a railroad from Brookville, Jefferson County, Pa., to Knoxdale, 10 miles. Connection will be made with the Buffalo & Allegheny Valley division of the Pennsylvania at Brookville. D. F. Maroney, who is Vice-President of the Pittsburgh, Shawmut & Northern, is reported to be President of this company.

BUTTE & SALMON RIVER.—This company has been incorporated in Montana to build from Butte to the Salmon River in Idaho, a distance of 18 miles. The road may be extended later to Thunder Mountain.

CANANEA, YAQUI RIVER & PACIFIC.—This line has been opened for traffic between Cochise, Ariz., and Pearce, 15 miles. The line will eventually be extended south to Naco, 65 miles. Connection will be made at Naco with the railroad belonging to the Green Consolidated Copper Co. R. R. Coleman, Prescott, Ariz., is reported to have the contract for grading to Naco. (March 20, p. 220.)

CHEYENNE & WASHITA VALLEY.—A charter has been granted this company in Oklahoma to build from a point in Day County, where the Washita River crosses the border of Oklahoma, through Roger Mills, Custer and Washita Counties to a point west of the Chickasaw reservation. H. D. Cox, W. A. Beatty, J. P. Johnson and others, of Cheyenne, are incorporators.

CHICAGO & WABASH VALLEY.—According to report, work on the branch from Kankakee River, a distance of 13 miles to Cedar Lake, Ind., will be commenced about Sept. 1. C. J. Hobbs is Chief Engineer, and F. E. Lewis, Superintendent, both of Kersey, Ind.

CHICAGO GREAT WESTERN.—The road was opened for passenger and freight traffic last week on the Fort Dodge-Council Bluffs extension from Fort Dodge to Tennet, about 40 miles northeast of Council Bluffs. From Tennet to Council Bluffs the track has been laid and ballasting is going on rapidly. Trains are expected to be running into Council Bluffs very soon.

CLARION, SUMMERVILLE & PITTSBURGH.—It is reported that this company will shortly be organized to build a railroad from Clarion east to Summerville, 17 miles. Connection will be made with a branch of the Pennsylvania R. R. at Summerville. C. F. Heidrick, Brookville, and W. S. Guffey, Pittsburg, Pa., are reported interested.

DES MOINES, IOWA FALLS & NORTHERN.—An officer of this company has announced that the road will be opened for passenger and freight traffic about the middle of August. It is already in operation from Iowa Falls to Cambridge, and the work of ballasting the track from Cambridge to Des Moines, a distance of 24 miles, it is expected will be finished Aug. 15.

DURHAM & CHARLOTTE.—It is reported that surveys have been completed for the extension of this road from Pittsboro, N. C., northwest to Greensboro, 48 miles. J. L. Tull, Gulf, N. C., is Chief Engineer. (See Construction Supplement.)

FROSTBURG & STATE LINE ELECTRIC.—This company has been incorporated in Maryland to build an electric line from Frostburg to the Pennsylvania State line, a distance of 10 miles, to connect with the road which is now building between Meyersdale and Salisbury. Names of incorporators not given.

GLADDENS VALLEY.—Charter has been granted this company, with power to build a railroad from Cooks Mills Station, Bedford County, Pa., west to Gladdens, Somerset County, five miles. Connection will be made with the Baltimore & Ohio at Cooks Mills Station. J. E. MacCloskey, Jr., Pittsburg, Pa., is President.

GREAT NORTHERN.—It is stated that the Pelican Rapids branch will be extended through the White Earth reservation, Minnesota. This new line will parallel the projected line of the Minneapolis, St. Paul & Sault Ste. Marie from Glenwood to St. Vincent. A. H. Hogeland, St. Paul, Minn., is the engineer in charge of the work.

HOT SPRINGS & SOUTHWESTERN.—This company has been incorporated in Arkansas, to build from the line of the Kansas City Southern, in Sevier County, through Sevier, Howard, Montgomery and Garland Counties, a distance of 70 miles, to Hot Springs. J. J. P. Odell and A. Roth are directors.

ILLINOIS CENTRAL.—It is reported that this company will build from Marion, Ky., to Cave-in-Rock, a distance of 12 miles, to get a direct route from Nashville to St. Louis. The Nashville entrance will be effected over the Tennessee Central tracks.

KANSAS CITY, HELENA & BRINKLEY.—It is stated that work will be begun at once on this proposed line from Brinkley, Ark., to Marianna, 27 miles. Rights of way between these two points have been secured and surveys practically finished. J. J. Farrell, Brinkley, Ark., is President and General Manager. F. H. Slayback is the engineer in charge of the work. (July 10, p. 520.)

LOUISVILLE & NASHVILLE.—Bids are reported as being asked for grading and re-ballasting the line between Baker's Hill and Guthrie, Ky.

MACOUPIN COUNTY.—Contracts are reported let for grading this road from the junction of the Chicago & Alton and the Jacksonville & St. Louis at Girard, Ill., to a point in the southern corner of Macoupin County, 30 miles. Rights of way for the greater part of the distance have been secured. H. S. Dorsey, Gillespie, Ill., is President, and F. E. Stanley, Chief Engineer. (July 10, p. 530.)

MANISTEE & NORTHEASTERN.—Maps have been filed by this company showing the location of its proposed Manistee River extension eastward from a point on its main line, near Copemish, Mich., a distance of 20 miles, through the counties of Manistee and Wexford.

MEMPHIS & CHARLESTON (SOUTHERN).—An officer writes that this company has no present intention of building an extension from Stevenson, Ala., to Chattanooga, Tenn., 30 miles. (July 3, p. 502.)

MIDLAND VALLEY.—An officer writes that work will be begun at once on this proposed line at Hartford, Sebastian County, Ark. The road will pass in a northeasterly direction through Montreal, Ark., Greenwood, Excelsior and Cameron to Fort Smith, 53 miles. (July 24, p. 548.)

MISSOURI, KANSAS & TEXAS.—Press reports state that this road has completed its line for a distance of 40 miles northeast out of Oklahoma City, and for a distance of 31 miles southwest out of Stevens, Ind. T. The length of the proposed line between these two points is 275 miles. (See Construction Supplement.)

NORFOLK & WESTERN.—An officer writes that work is now in progress on a branch from Cephas, W. Va., down the Bluestone River, a distance of 17 miles. Track has also been laid on the following branches and extensions: Dry Fork branch, Iaeger to Ritter, W. Va., five miles; Tug Fork branch, Welsh to Gary, W. Va., 7½ miles; Ivanhoe-Speedwell branch from a point 4½ miles west of Ivanhoe to Cripple Creek, Va., seven miles. Grading is in progress on the extension from Naugatuck to Kenova, W. Va., 59 miles.

NORTHERN PACIFIC.—It is reported that contract for 11 miles of new grading and track laying has been let to Twohy Bros., for the Rocky Mountain extension from Hope, Idaho, to Sandy Point. The cost will be $400,000 and the work will be finished in about a year.

PITTSBURG, CARNEGIE & WESTERN.—Bids are now being asked by this company for the building of 37 miles in Green County, Pa. The work includes a new coal road from Hickory to Tylerdale and Waynesburg, and a branch from Waynesburg south to the West Virginia State line, 12 miles.

RICHMOND, FREDERICKSBURG & POTOMAC.—The newspapers say that an expenditure of $4,000,000 will be made by this company for improvements on its road. The entire line will be double tracked and the roadbed re-ballasted. This company is controlled by the Richmond-Washington Company in the joint interest of the Atlantic Coast Line, Baltimore & Ohio, Chesapeake & Ohio, Seaboard Air Line, Pennsylvania and Southern Railroads.

SOUTHERN.—An officer writes that although location surveys have been made for an extension from Jasper, Ind. T., to French Lick Springs, 20 miles, nothing definite has yet been determined relative to the building of this extension. If this line is built, connection will be made with the Chicago, Indianapolis & Louisville at French Lick. (July 17, p. 534.)

Press reports state that this company has begun work 30 miles south of Knoxville, Tenn., on the Rabun Gap extension to the Georgia line, and a new company has been chartered in North Carolina to build toward the Tennessee line to the Walhalla branch to connect with the Rabun Gap line, a distance of 200 miles.

SUMPTER VALLEY.—The newspapers say that location surveys for eight miles of this road west of Whitney, Utah, have been made. The Utah Construction Co. has the contract for grading. J. C. West, Ogden, is the engineer in charge of the work.

TEMISKAMING & NORTHERN ONTARIO.—It is reported that this company has laid track 10 miles north from North Bay, and the work is proceeding at the rate of half a mile per day.

TOLEDO, ST. LOUIS & NEW ORLEANS.—An officer writes that the proposed route of this road is from Effingham, Ill., southeast via Carmi to Paducah, Ky., approximately 200 miles. Contracts for grading will shortly be let. H. B. Pierce, Golconda, Ill., is President. (July 17, p. 534.)

VARNER, CUMMINGS & EASTERN.—An officer writes, regarding this line reported in our issue of July 17, p. 534, as incorporated to build from Linwood, Ark., to Watson, 50 miles, that grading contracts will be let to local parties Aug. 15. Of the projected distance, all except about five miles runs through flat country. No bridges of consequence will be required. Andy Dalhoff, of Linwood, Ark., is the contractor.

WESTERN MARYLAND.—Contracts for building the extension from Cumberland, Md., to Cherry Run, W. Va., 65 miles, has been awarded as follows: Section one, which is approximately 22 miles long, to Degnon & McLean Contracting Co., New York; section two, to McArthur Bros., Chicago; section three, to Kilpatrick Bros., of Chicago. The work is very heavy and will involve several tunnels and a large number of bridges.

WESTERN PACIFIC.—This company has been incorporated in Utah, with a capital of $50,000,000, to build from Salt Lake City, a distance of 810 miles, through Beckwith Pass, Oroville, Sacramento, Stockton and Oakland to San Francisco. Local reporters think that this project belongs to the Gould interests.

GENERAL RAILROAD NEWS.

BANGOR & AROOSTOOK.—The Maine Railroad Commission has recently granted the petition of this company to increase its capital stock $500,000. The increase is said to be for the purpose of buying the leased Fish River R. R., extending from Ashland, Me., to Fort Kent, 50 miles. (July 17, p. 534.)

CHATTAHOOCHEE & GULF.—Bids will be received Aug. 22 for all or any portion of $108,000 5 per cent. bonds issued for the purpose of building an extension of the main line for a distance of about 24 miles beyond Sellersville, Ala. The mortgage is limited to $4,500 per mile.

CHICAGO GREAT WESTERN.—An ordinance lately passed by the City Council July 14 conveys the interest of the city of Oelwein, Iowa, in certain streets, to this company and the Mason City & Fort Dodge, for the purpose of building extensive yards, with roundhouses, shops and other railroad structures. It is said that the buildings will cost $200,000, and that work will be commenced immediately.

DETROIT SOUTHERN.—At a recent meeting of the stockholders of this company, it was voted to increase the capital stock from $17,000,000 to $26,000,000.

ERIE.—At a recent meeting of the directors of this company, it was voted to increase the semi-annual dividend on the first preferred stock from 1½ per cent. to 2 per cent., placing the stock on a 4 per cent. dividend basis.

EVANSVILLE & TERRE HAUTE.—The board of directors, at a meeting held July 28, elected B. F. Yoakum President. Mr. Yoakum is also President of the St. Louis & San Francisco, and it is officially announced that control of the Evansville & Terre Haute has passed to the St. Louis & San Francisco. The road, with the Evansville & Indianapolis and branches, aggregates a length of 303 miles, and it connects the southern terminus of the Chicago & Eastern Illinois with Evansville on the Ohio River. The C. & E. I. has been controlled by the St. L. & S. F. for a year past.

GAINESVILLE, JEFFERSON & SOUTHERN.—The Northeastern Circuit Court has ordered that this road be sold under foreclosure sale at Gainesville, Ga., on Sept. 15, 1903. The road runs between Gainesville and Social Circle, 52 miles, with a branch from Belmont to Jefferson, 13 miles.

GRAND TRUNK.—General Superintendent McGuigan is quoted as saying that a large amount of money is to be spent by the company at Stratford, probably $1,500,000, in the rebuilding and enlargement of the shops. The number of employees will be almost doubled.

LEHIGH VALLEY.—The Lehigh Valley Railway of New York, which was incorporated by the Lehigh Valley Railroad for the purpose of leasing several subsidiary and controlled companies, has increased its capital from $5,900,000 to $10,000,000. The following companies have been leased by the Lehigh Valley Railway Company of New York: The Seneca County Ry., the Waverly & State Line Ry., the Canal R. R., the Middlesex Valley Ry., the Rochester Southern R. R., and the Elmira, Cortland & Northern Ry.

NATIONAL OF MEXICO.—This company has given notice that the certificates for second preferred and deferred stock will be issued on and after July 27, at the office of the company, 30 Pine street, New York City, in exchange for the outstanding common stock at the rate of two shares of second preferred and one share of deferred, for every three shares of common stock.

SEABOARD AIR LINE.—President Williams has announced that the consolidation of the Florida Central & Peninsula system, comprising 806 miles of road in Georgia and Florida, with the Seaboard Air Line, has become effective. This road has hitherto been controlled by the Seaboard Air Line through stock ownership, and has been operated separately. According to the terms of the merger, the outstanding 4 per cent. mortgage bonds of the Seaboard Air Line will now become a direct lien upon approximately 800 additional miles of road. It is also announced that the Seaboard Air Line has purchased practically all the outstanding minority stock of the Seaboard & Roanoke. Arrangements have been made for the merger of these two companies.